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Computer-Assisted Project Based Learning in Second Language: Case Studies in Adult ESL

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Computer-Assisted Project Based Learning in Second Language: Case Studies in Adult ESL

by

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Dedication

This dissertation is dedicated to my husband Sébastien Taveau, who supported me every inch of the way, and to my daughter Rachelle Taveau, whose love fueled me with the energy and determination needed to finish.

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Computer-Assisted Project Based Learning in Second Language: Case Studies in Adult ESL

Publication No._____

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This study investigates English as a second language learner experiences and development in two computer-assisted project based learning classes. Case studies were conducted in one beginning and one intermediate level class in a Community Based English Tutoring program. Participants included 27 adult English as a second language students and 2 teachers. The teachers implemented a computer-assisted version of project based learning entailing the organization of learning around real world problems, student centered instruction, student collaboration, teacher as facilitator, the use of authentic materials and audiences, formative assessment, reflection, and the production of authentic artifacts. Implementation of this approach in the beginning class was facilitated by organized team work strategies and collaborative translation. Participants used English extensively in a variety of modes and had many communicative opportunities for meaningful interaction and negotiation. The affective outcomes were predominately

positive in both classes despite a variety of circumstantial challenges in the teaching context. In both classes, learners developed independence, higher order thinking, and electronic literacy skills. They also developed specific English language skills and language learning strategies. The teachers faced challenges similar to those reported in previous literature on project based learning; they did not experience challenges exclusive to second language instruction. Formative assessment and reflection were found to be challenging, but informative. Overall, data suggest that rich target language input and output and linguistic development are afforded by this version of computer-assisted project based learning which attends to important psychological components in learning.

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Chapter 1: Introduction

Two major themes in the field of Second Language Acquisition (SLA) today are the new conceptions of language and language learning supported by constructivist[1] learning theory and the need in the information age for second language learners to develop learner autonomy, electronic literacy, and higher order thinking skills (ACTFL, 1999; Shetzer and Warschauer, 2000; Reagan, 1999). How do we address these needs while also applying current knowledge about learning? This dissertation explores a constructivist-based project based learning approach. Researchers in a wide variety of disciplines have found project based learning to foster high order thinking skills and cultivate learner autonomy (Au and Carroll, 1997; Barrows, 1996; Blumenfeld, Marx, Bass, Fredricks, and Soloway, 1991; Krajck, 1998; Schmidt, 1994). The approach has also been shown to be particularly effective when combined with computer technology (Barron et al., 1998; Edelson, Gordin, and Pea, 1999; Stites, 1998). However, little empirical research has been conducted on project based learning in SLA, and even less has been carried out on computer-assisted project based learning. It is unclear what language related development occurs with project based learning and few systematic studies have been conducted on the second language learner experience with the approach. Moreover, the few existing studies of project based learning in SLA (Beckett, 1999; Eying 1989) point to possible second language specific instructional challenges. Further in depth exploration of computer-assisted project based learning is needed in to explore the learner experience and possible teaching challenges in second language

contexts. This dissertation employs a qualitative research methodology to investigate a computer-assisted version of project based learning in an adult English as a second language (ESL) context. It examines in depth the ESL learner experience and linguistic development. It also looks at participant response to constructivist-based instructional features in the approach, and investigates specific teaching challenges in the ESL context. The experiences of two adult English as a second language (ESL) classes, one beginning level and one intermediate level, are presented in two case studies.

SECOND LANGUAGE ACQUISITION

In this dissertation, the term Second Language Acquisition (SLA) is used broadly to include all second and foreign language contexts where the instruction of a language other than the native language is occurring. Computer-assisted language learning (CALL) is considered a sub-field within SLA. The various contexts that SLA encompasses have diverse goals, linguistic opportunities, learner needs, and issues. However, all of these contexts share the issue of how to enable learners effectively to acquire a language that is not their native tongue. This study, which investigates an alternative language learning approach, emerges out of dissatisfaction with the way that issue has been addressed in traditional instruction across different areas of SLA.

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[1] The term constructivism is used broadly in this dissertation to include the socio constructivist branch.

SECOND LANGUAGE ACQUISITION THEORY

Theories of language learning have shifted considerably over the last century (Cook, 1999; Reagan, 1999, Warschauer, 2000). Second language scholars have moved beyond behaviorist concepts of language learning and expanded upon cognitive views of learning. We know today that language learning is much more than the learning of discrete points and correct grammatical forms. It involves the acquisition of sociolinguistic, discourse, and strategic competences (Canale, 1983). Educators recognize that language learners need more than comprehensible input. A widely accepted theory is Swain's (1995) comprehensible output hypotheses. The output hypothesis states that learners need opportunities for "pushed output" where they are writing or speaking in a context that requires correct and appropriate use of the target language. Opportunities for negotiation arise when learners have to adjust their output in order to reach a communicative goal. This process of modification enables learners to reconstruct their knowledge base and assists in the overall acquisition of the target language (Swain and Lapkin, 1995). In addition, researchers agree that learner variables such as motivation, self-confidence, anxiety, and strategy use play a major role in the language acquisition process (Krashen, 1985; Ellis, 1994; Oxford, 1990) At the same time, scholars are emphasizing the importance of studying language as a whole within its linguistic, social, and cultural context (Edelsky, Altwerger, & Flores 1991; Galloway, 2000; Kern & Warschauer, 2000). These recent trends in SLA literature are supported and, in many cases, informed by constructivist learning theory. In practice, however, common SLA

methods such as the academic, audiolingual, even some applications of the communicative method are more reflective of behaviorist learning theory and early cognitive theory (Cook, 1999; Kern & Warschauer, 2000). Further research is needed to explore more practical applications of current knowledge about language learning (Reagan, 1999). Project based learning is one constructivist-based methodology that has been successfully applied in K-12 classrooms, the sciences, mathematics, and instructional technology (Stites, 1998).

SECOND LANGUAGE LEARNING IN THE TWENTY FIRST CENTURY

How does a computer-assisted version of project based learning address the needs in SLA today? The information age poses new exigency for second language learners to develop electronic literacy and higher order thinking skills. Computers have enabled abundant communication, consumption, and manipulation of cultural and linguistic information, but the effective use of that information poses new problems. In addition to the traditional language skills, second language learners need to be able to obtain, interpret, evaluate, and present this information effectively (Furstenberg, Levet, English, Maillet, 2000; Gonglewski, 1999). They also need to know how to use computers to express meanings in the target language. Although project based learning is not necessarily a computer-assisted method, it has been proposed as one means for second language learners to develop these electronic literacy and higher order thinking skills (Shetzer & Warschauer, 2000).

WHAT IS PROJECT BASED LEARNING?

Project methods are not new, but they have changed considerably over time. The seeds for Project based learning were planted in the first half of the last century by John Dewey (1910, 1916) and William Heard Kilpatrick (1918). In Dewey's seminal work, "Democracy and Education" he stressed that in order to bring about a more democratic society, educators needed to develop a learning process that prepared young people to be responsible citizens and that took on the very form of the democratic society. He believed education should be considered as life itself rather than a mere preparation for later living (Dewey, 1916; Kilpatrick, 1918). Kilpatrick outlined a practical application of Dewey's work in his essay 'The Project Method' (1918). The Project Method called for learning through experience by solving real-world problems. In this method, projects are "whole-hearted purposeful activity" carried out in a social environment. They are activities that are focused around learner interests, that have practical ends, and that are executed collaboratively and for real audiences (Kilpatrick, 1918). The work of Kilpatrick and Dewey has had considerable influence, but applications of the Project Method have not always been consistent and successful. Since its inception, the Project Method has taken many different forms and has been applied in a variety of disciplines and settings. However, it has only recently entered into mainstream practice within specific discipline areas. Some problems experienced with earlier applications of project methods were the lack of attention to motivational issues and the tendency for students to get lost in the doing without understanding the learning goals (Blumenfeld et al. 1991; Barron, Schwartz, Vye, Moore, Petrosino, Zech, Bransford, & The Cognition and Techonology Group at Vanderbilt, 1998).

Over the last decade, scholars have worked to refine the Project Method to address these past problems with the approach and to incorporate new knowledge about learning. This dissertation investigates one outcome of that work, a recent constructivist-based version of the Project Method, the Project Based Learning Approach (PBL). PBL is defined as "a comprehensive approach to classroom teaching and learning that is designed to engage students in investigation of authentic problems" (Blumenfeld et al., 1991, p.369). Recent versions of the approach entail a number of constructivist-based features designed to support learning and instruction:

1) the organization of learning around real world problems,
2) student centered instruction,
3) collaboration,
4) teacher as facilitator,
5) an emphasis on authenticity,
6) formative assessment,
7) reflection,
8) and the production of authentic artifacts (Barron et al., 1998; Blumenfeld et al., 1991; Edelson et al., 1999; Williams and Hmelo, 1998)

These design features are geared towards increasing learner confidence, sustaining motivation, promoting strategic activity, and fostering metacognitive awareness. In particular, the constructivist-based features of formative assessment and reflection are designed to call attention to and increase student knowledge of the learning process. Together the instructional features enable learners to acquire content and skills while also developing learner autonomy. In addition, computer technology is frequently used as a means of supporting learning and instruction in PBL (Blumenfeld et al., 1991; Barson &

Debski, 1999, 2000a, 2000b). Technology is not an essential part of PBL, but computers have been found to facilitate its implementation (Edelson et al., 1999).

PURPOSE OF STUDY

The primary goal of this dissertation study is to provide an in depth examination of the learner experience and of the development that occurs with computer-assisted PBL in two English as a second language classes. The study is also an attempt to understand better the application of computer-assisted PBL methodology and the various challenges it may pose within a second language context. The research questions in the study are:

1. What are the learning experiences of adult ESL students in the two computer-assisted project based learning classes?

2. What are the linguistic experiences of adult ESL students in the two computer-assisted project based learning classes?

3. What linguistic gains are afforded by computer-assisted project based learning?

4. What instructional challenges do the two ESL teachers experience with the computer-assisted project based learning approach?

5. What are the teacher and student responses to the Instructional features of formative assessmentand reflection in the two computer-assisted project based learning classes?

RATIONALE

The reasons for this study are multiple, but they fall into one overlying theme. Despite the proven potential of project based learning methodology and speculated potential of the computer-assisted version, research on the learner's experience with the approach is limited and especially scarce within the area of adult ESL. There are several

indications of the potential of the methodology. First, we know from previous research in a variety of disciplines outside SLA that project based learning can foster higher order thinking skills as well as increase learner motivation and autonomy (Stites, 1998). Researchers also speculate that computer-assisted project based learning is an appropriate methodology for addressing the need in the information age for learners, particularly ESL learners to develop electronic literacy skills (Warschauer, 2000b). Thus, the methodology appears promising and relevant for SLA. Second, constructivist learning theory has gained wide acceptance in SLA and project based learning is one means of applying constructivist-based notions of learning. Different components of the approach are supported by constructivist-based theories of learning. These components are discussed in detail in the literature review which follows this section.

Second language acquisition theorists believe that meaningful communicative opportunities for negotiation and interaction are needed for learners to acquire language (Beckett, 1999; Swain, 1995; Kern, & Warschauer, 2000). Unfortunately, the traditional classroom discourse of "teacher initiation, student response, and teacher evaluation" (Cazden, 1988, p. 29) provides little opportunity for language learners to interact in the target language and few authentic communicative opportunities. This gap between second language theory and classroom practice is a third reason for investigating project based learning. Traditional methods provide few opportunities for authentic communication and do little to break up traditional classroom discourse. Project based learning, on the other hand, places learners "in situations that require authentic use of language" (Moss & Van Duzer, 1998, p.1). Learners have to interact and negotiate

meaning as they select topics, plan, organize, research, self and peer assess, develop products, and share results (Wrigley, 1998).

Because of the potential of the methodology and its alignment with current SLA theory, a discussion of project based learning has reemerged recently in SLA literature (Beckett, 2002; Wrigley, 1998; Warschauer, 2000b). Correspondingly, a number of similar computer-assisted project applications have been reported within the area of Computer-assisted Language Learning (CALL) (Barson & Debski,1996; Debski, 1999, 2000a, & 2000b; Bicknell, 1999; Gaer, 1998; Kubota, 1999; Lee, 1997; Pertusa-Seva, 2000; Vick, Crosby, and Ashworth, 2000). However, little empirical research has been conducted in either area.

Paucity of Research on PBL in SLA

This section focuses on project based methods in SLA which are not computer-assisted. The two existing empirical studies in SLA within the area of ESL, Beckett (1999) and Eyring (1989), focus on teacher and student evaluations of the project based learning. They not do discuss language related development or linguistic experiences with the methodology in any depth. Moreover, these studies point to a need for further investigation of second language specific teaching issues. The third empirical study on project based learning, Turnbull (1999), is in the area of French and focuses on instructional variations in project based learning. Of these three systematic studies in SLA (Beckett, Eyring, and Turnbull) none concentrate in any depth on the learner experience and linguistic development. Additionally, little information is provided in these studies about the constructivist-based instructional features of formative assessment

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and reflection. These two features which have been found to be essential in the successful implementation of the project based learning (Blumenfeld et al.1991; Barrons et al., 1998), warrant further study in SLA. Furthermore, research is needed on PBL in the context of adult ESL education. The participants of these four empirical studies in SLA were very different from the adult learners in this study. Eyring (1989) worked with university level ESL students in Los Angeles, California. Beckett's participants were ESL students at a Canadian secondary school. Turnbull's participants were ninth grade French language students in Canada. Additional research is needed to explore the adult ESL learner experience, and the linguistic development, instructional features, and teaching issues that emerge with PBL.

Paucity of Research on PBL in CALL

In Computer-assisted Language Learning (CALL), the dialogue on project based learning has advanced more over the last decade, but a significant gap is still present in the research. On the one hand, the last ten years have witnessed a trend towards integrated CALL, content, task, and project based instruction with Internet and multimedia technology (Warschauer, 1998), much of which resembles project based learning (PBL) in its emphasis on student centered learning and authentic materials (Bicknell, 1999; Gaer, 1998; Kubota, 1999; Lee, 1997; Pertusa-Seva, 2000; Vick et al., 2000). On the other hand, few studies in CALL outline a comprehensive approach. The instructional features that are used vary considerably and are often not clearly outlined. The exceptions are several studies originating at Stanford (Barson, Frommer, & Schwartz, 1993; Baron & Debski, 1996; Hermann, F., 1997) and the University of

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Melbourne (Debski, 2000a, 2000b; Debski. and Gruba, 1999). These studies outline important teaching issues and learning gains. However, they provide little information on the teacher role and do not discuss in any detail the features of formative assessment and reflection. Furthermore, the Stanford studies, which look at the experience of Polish and French language students at the university, are a far cry from the average adult English as a Second Language setting, and it would seem unrealistic to assume the transferability of the findings. In summary, recent research on project methods in CALL has filled some holes in the literature, but the picture is hardly complete.

SUMMARY OF DISSERTATION STUDY

This dissertation is a unique attempt to address the gap that exists at the juncture of Computer-Assisted English Language Learning and project based learning. This study investigates a computer-assisted version of the project based learning approach (PBL) which includes all of the constructivist-based instructional features mentioned in recent literature and research:

1) the organization of learning around real world problems,
2) student centered instruction,
3) collaboration,
4) teacher as facilitator,
5) authenticity through the use of authentic materials and audiences,
6) formative assessment,
7) reflection,
8) the production of authentic artifacts,
9) and the use of computers to support instruction and learning.

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The dissertation looks at the application of PBL in two adult ESL classes, one beginning level and one intermediate level. The ESL classes are part of a Community Based English Tutoring (CBET) program in a Mexican migrant community in Northern California. Because of the nature of the research setting, the study could certainly be analyzed from a Freirian or feminist viewpoint; however, the purpose of the study is a micro focus upon the linguistic experience of the participants. Unlike previous studies, the dissertation examines in depth the experience of the ESL learners with PBL. It is also, to the best of my knowledge, the first study to investigate the experience of novice to beginning level ESL students with computer-assisted project based learning. The study focuses on the different types of learning and linguistic development and looks closely at teacher and student response to the instructional features of formative assessment and reflection. The study also investigates the issue raised by Eyring (1989) and Beckett (1999) of second language specific teaching challenges in PBL. A qualitative research methodology was employed to explore these and other emergent themes in the study.

During one complete summer session from June 23, 2003 to August 7, 2003, I immersed myself in the ESL classroom setting gathering a rich combination of data: baseline background and final skill level questionnaires, class observations, field notes from classes and informal conversations, regular class recordings, teacher journals, student work, formative assessment, reflection, student projects, and student and teacher interviews. These data were analyzed inductively. Participant data were used to name and categorize salient aspects of the student learning and linguistic experience, linguistic

gains, instructional challenges, and participant response to formative assessment and reflection.

Despite some "traumatic classroom circumstances" (CBET Coordinator, October, 2005), the study findings include positive affective outcomes relating to learner confidence, attitudes, engagement, motivation, independence, and pride and ownership. The results entail skill development in the areas of teamwork, higher order thinking, content knowledge, and computer skills. Data shows extensive use of English in a variety of modes and plenty of communicative opportunities for meaningful interaction and negotiation. An analysis across data instruments reveals specific types of linguistic development in the areas of reading, writing, speaking, listening, and vocabulary. The results also indicate instructional challenges commonly reported in previous studies outside of SLA, but few challenges that are specific to ESL. Finally, the findings show both the potential difficulties and benefits of the formative assessment and reflection features in PBL. In sum, the study provides new insight into the learning experience of adult ESL students with computer-assisted PBL.

DEFINITIONS

The section below provides definitions of key terms used in this study: computer-assisted language learning (CALL) and computer-assisted English as a second language learning (CAELL), English as a second language (ESL), project work, project based learning, computer-assisted project based learning, PBL, and Second Language Acquisition (SLA).

CALL and CAELL

The term CALL is used in this study to refer to the application and study of computers in language instruction and learning (Levy, 1997, p.1). CAELL refers to computer-assisted English as a second language learning, the application and study of computers in English as a second language instruction and learning.

ESL

The term ESL refers to a sub-field of second language acquisition focusing on the learning and teaching of English as a second language. In this study, the term ESL is used broadly to also include English as a foreign language (EFL) learning and teaching.

PROJECT WORK

Project Work is typically defined as a <u>method</u> that is student-centered and makes use of real world second language contexts. Project work generally entails the use of authentic language and is geared towards the practice of the four skills: reading, writing, listening, speaking skills. While applications of the method have varied considerably, most include an emphasis on content over form and the integration of the four skills (Eyring, 1997, p.4; Fried-Booth, 1986, p.5-7).

Project Based Learning/Computer-assisted Project Based Learning

Project based learning is defined as "a <u>comprehensive approach</u> to classroom teaching and learning that is designed to engage students in investigation of authentic problems" (Blumenfeld et al., 1991, p. 369). Computer-assisted project based learning refers to applications of project based learning in which computers are employed.

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PBL

The term PBL is used to discuss a comprehension version of project based learning implemented in this study. PBL as applied in this study includes of use of nine instructional features:

1) the organization of learning around real world problems,
2) student centered instruction,
3) collaboration,
4) teacher as facilitator,
5) authenticity through the use of authentic materials and audiences,
6) formative assessment,
7) reflection,
8) the production of authentic artifacts,
9) and the use of computers to support instruction and learning.

SLA

SLA refers to the field of second language acquisition in which language learning and instruction are investigated. The term second language is a reference to "any language other than the first language" (Ellis, 1994, p.11). In second language, the language plays an "institutional and social role in the community" whereas in foreign language the language generally does not have a dominant role in the community. Nonetheless, for the purposes of investigating language learning conditions and processes, the term SLA is often employed as an overarching term to cover second and foreign language learning (Ellis, 1994, p.12). This study uses SLA in the latter sense.

Chapter 2: Literature Review

The following literature review includes five sections. In the first section, I describe PBL and provide an explanation of the discrepancy between definitions of project based learning in Second Language Acquisition (SLA) and definitions in other disciplines. In the second section, I discuss project based learning research in other disciplines from which this dissertation derives its definition. The following sections focus on SLA literature. The third section discusses current theory and needs in SLA. The fourth section provides a critical review of literature on project based methods in SLA. The fifth section contains an overview of literature on project based methods in the sub-field of Computer-assisted Language Learning (CALL).

PROJECT BASED LEARNING DEFINITION

The following explanation of the definition of project based learning is necessary because readers may have an understanding of project based learning that is different from the one in this dissertation. Although the dissertation focuses on second language learning, the definition of project based learning it employs is derived from literature in K-12 Education, Educational Psychology, Instructional Technology, Mathematics, and the Sciences. Before defining Project Based Learning some clarification of like terms is in order. In disciplines outside SLA, the terms Project Based Learning (or Project Based Instruction), Inquiry-Based Learning, and Problem-Based Learning are used, sometimes interchangeably. The terms Problem Based Learning and Inquiry Based Learning are most commonly employed in medical and science education. The difference between

them is that investigations in Problem Based Learning are stimulated by real world

problems and investigations in Inquiry-Based Learning are prompted through questions.

Although some educators still differentiate between Project-Based Learning and problem

and inquiry methods[2], the definition of the Project Based Learning approach (PBL) in this

dissertation is inclusive of all three. Problems and questions are frequently used to

scaffold investigations and project work (Barron et al., 1998; Moore, Sherwood,

Bateman, Bransford, and Goldman, 1996; Schwartz, Lin, Brophy, and Bransford, 1999;

Williams and Hmelo, 1998) in PBL. The main difference is that project based learning

results in a student generated artifact while inquiry and problem based approaches do not

necessarily entail the production of an artifact. In this dissertation the term PBL refers to

the following definition:

> Project Based Learning is a comprehensive approach to classroom teaching and
> learning that is designed to engage students in investigation of authentic
> problems" (Blumenfeld et al., 1991, p. 369).

The aim of the PBL methodology is to enable learners to acquire content and skills while

also cultivating their metacognitive awareness (Barron et al., 1998; Blumenfeld et al.,

1991; Williams and Hmelo, 1998). In the last two decades, scholars in mainstream

disciplines have applied constructivist learning theory and used previous research on

discovery and project based methods to develop and refine PBL towards these ends

(Barron et al., 1998; Blumenfeld, Soloway, Max, Krajcik, Guzdial, & Palincsar, 1991;

Polman, J., 2000; Petrosino, 1995). The resulting method contains key instructional

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2 Project and Problem based learning are defined separately in the Interactional Multimedia Production
web site: http://www.edb.utexas.edu/multimedia/theohome.html

features: the organization of learning around real world problems, student centered instruction, collaboration, teacher as facilitator, and an emphasis on authenticity, formative assessment, reflection, and the production of authentic artifacts. Recent versions of PBL have also made use of computer technology for research, communication, presentation and the scaffolding of projects (Barron et al., 1998; Edelson et al., 1999; Stites, 1998). Overall, PBL is more comprehensive than the project methods that have typically been applied in SLA. It has additional constructivist-based instructional and assessment features, and a broader range of learning goals. Second language educators and researchers can benefit from learning about this more modern version of project based learning which has rarely been investigated in SLA. The following section provides a description of the key features of PBL and a discussion of its theoretical basis. This section will serve as a reference point for subsequent discussion of project based learning in SLA and other disciplines. The following characteristics are key to PBL type settings.

Instructional Features in PBL

Organization of Projects in PBL

In PBL, projects are organized around meaningful problems. The problems provide an authentic context within which learning and project construction may take place. A problem should be complex enough to drive inquiry. The topic should be relevant to students' lives. Most importantly, the problem should be one that is encountered in real world (rather than solely academic) situations: how to build a playground, make a rocket go higher, open a business, publish a newspaper, design a

travel itinerary, or prepare children for study in a foreign country. This contextualization of learning within real world problems helps to sustain learner motivation and to promote strategic behavior (Barron et al., 1998; Blumenfeld et al., 1991; Williams and Hmelo, 1998).

Authenticity in PBL

Authenticity is manifested in four ways in PBL. First, unlike traditional classrooms where assignments are often completed for the primary purpose of being evaluated by an instructor, the tasks in PBL are geared towards solving real world issues. Second, PBL classes make use of authentic materials. In SLA terms, authentic materials are materials created by a target culture for a target culture; they are not altered for instruction (Kramsch, 1999). Authentic materials include information, tools, resources, and references used by experts or members of a target culture. Third, PBL typically involves outside audiences. Learners in PBL frequently share their results with their peers, students from other institutions or levels, or experts. This makes the purpose of completing a task more authentic. Instead of producing solely for their teacher, they are required to communicate with a broader audience. Fourth, projects are created in a variety of "real world" rather than academic formats: design plans, models, presentations, or publications rather than essays, worksheets, or tests. The use of authentic problems, materials, audiences, and artifacts adds value and interest to projects and facilitates transfer of information to future contexts (Blumenfeld et al. 1991).

Student Centered Instruction and Collaboration in PBL

Instruction is student centered in PBL. Student questions and interests influence the direction and pacing of classes. Students help choose project themes, the problems they address, and the form these will take. They decide what will be learned and how it will be learned (Gijselaers, 1996). Syllabi are often negotiated, and learners work in collaboration with their peers, typically in small teams. Learners are also given responsibility for the management of their groups and are often asked to review their peers. When employed these measures of students centered instruction help to promote student involvement and deeper learning (Barron et al., 1998).

Formative assessment in PBL

Formative rather than summative assessment is emphasized in PBL. In formative assessment, the instructor evaluates the ongoing learning process rather than just the outcome. The aim is to bring attention to and give credit for the productive ways students go about learning and achieving certain results (Angelo and Cross, 1993). The goal of formative assessment in PBL is to promote learner awareness of their strategic processes and encourage student ownership of the learning process (Blumenfeld et al., 1991).

Reflection in PBL

The term *reflection* is used here to refer to guided or formalized reflection facilitated by class assignments or group discussion. In guided or formalized reflection, students are given assignments in which they are asked to think about what they have done and how their behavior has led to certain outcomes. The goal of this type of

evaluation is to extend students' metacognitive awareness [3] so that they may go on to be more effective and autonomous learners. Reflection and formative assessment are two components in PBL that differentiate it from earlier project and discovery oriented methods as well as from many Project Work applications in SLA.

Facilitator Role in PBL

The instructor role in PBL is also non-traditional. He or she is not an authoritarian figure whose primary role is to correct and command students. Instead, the facilitator's job is to support the inquiry process by scaffolding, providing support that enables learners to extend their skills and knowledge to higher levels. The facilitator assists students through coaching, instructional scaffolding or guiding, and modeling. Coaching includes generating interest, encouraging students in their pursuit of specific goals, and helping them to control frustration or anxiety. Guiding entails simplifying projects by separating tasks into manageable steps, creating metaphors for the process, and marking critical features and discrepancies in the material. Modeling involves the presentation of idealized models and approaches and the demonstration of expert processes and strategies (Barron et al., 1998). The facilitator also has a number of management roles. He or she helps students to organize group work: encouraging students to define team roles or individual goals, initiating discussion on group strategies, or mediating between students. Direct instruction is not prohibited but happens in response to student questions or demonstration of need (Sidman-Taveau and Milner-Bolotin, 2001). This "just-in-time" instruction is seen as more valuable than a rigidly scheduled curriculum because it is

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3 Metacognitive awareness is knowledge about one's self as a learner, the task, and effortful processes,

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directed by student as their needs and interests arise. Overall, the goal is to engage and enable students so that they gain ownership of their learning and increase confidence in their abilities.

Computer Technology in PBL

Although technology is not a necessary feature in PBL, a number of recent applications have successfully incorporated computer technology into the approach. Computers typically play a supportive role in PBL. A variety of types of computer technology have been employed to scaffold students as they research, produce, share, and present information and student products (Edelson et al. 1999; Barron et al. 1998; Koschmann, Kelson, Feltovich, & Barrows, 1996; Sidman -Taveau and Milner-Bolotin, 2001). For example, internet technology can be used to access authentic materials (Sidman-Taveau & Milner-Bolotin, 2001). Computer mediated communication has frequently been used to facilitate contact among students and outside audiences (Koschmann et al., 1996). Multimedia has been employed to simulate real world contexts and present problems or concepts. Software and web pages have created opportunities for learners to choose and access materials on an as needed basis. Interactive computer interfaces can also be used to structure the learning process and software programs have been created to support formative assessment and reflection (Barron et al., 1998; Schwartz et al., 1999). Technology is not a prerequisite in PBL, but it can facilitate the teaching and learning process.

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which facilitate the acquisition and use of knowledge (Alexander, Schallert, & Hare, 1991).

Constructivist Learning Theory and PBL

The principles underlying the inclusion of the above characteristics in PBL are derived from constructivist learning theory. Constructivist theory maintains that learners play an active role in the construction of their own knowledge. Many constructivists believe that learning occurs when learners connect new knowledge to their background knowledge (Fostnot, 1996). One application of these theories is the feature of student-centered instruction. The idea is that giving students choices about their learning will enable them to make more meaningful connections. Another notion, supported by the theories of active learner knowledge construction, is that affective factors have a large impact on the learning process. For example, scholars recognize that motivation plays a significant role in the success of a learner. In addition, the concept of an active learner role has led researchers to look at particular learner variables such as strategy use.

Nonetheless, the issues of how to increase learner motivation and of how to promote strategic behavior are complex. Blumenfeld et al. (1991), for example, theorize that in order to be motivated learners need to have interest, value, and feelings of competence. They need to be engaged by a topic, to see it as important, and to feel that they are capable of doing it. The learner variable of strategy use is equally complex. Strategy use requires good cognitive monitoring, positive self-assessments, and feelings of self-efficacy. Learners need to be able and willing to evaluate their progress towards a learning goal and to self-correct (Garner, 1990). They need to feel capable, and they need to believe that a particular strategy will lead to success (Paris & Winograd, 1990). Learners who attribute success to their effort are more likely to engage in strategic behavior (Benenson & Dweck, 1986). Thus, from the constructivist perspective,

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successful learning entails, among other elements, a delicate balance between learner affective factors and learner variables. How are such notions applied in a constructivist-based methodology such as PBL?

The instructional features of teacher as facilitator, formative assessment, and reflection are an attempt to address some of the key psychological factors entailed in learning. In contrast to the traditional teacher role of knowledge provider and error corrector, the facilitator's role is to promote and support active student involvement and strategic behavior. One way the facilitator promotes strategic behavior is by helping learners to name strategic actions and to recognize where their actions have been successful. The facitator also attempts to affect learner motivation by giving students autonomy, choice, and encouragement. Similarly, formative assessment is used to call attention to the learning process and to increase learner self-efficacy. The belief is that as learners gain awareness of how and what they are learning, they have the opportunity to evaluate and improve their learner processes. Reflection is another means of promoting metacognitive awareness. The belief is that as learners reflect upon their learning, they will see how they have caused that learning. In an ideal application of these features, the learner gains confidence in their ability to positively affect their learning. With this confidence, learners are more likely to feel motivated to engage in strategic activity (Sidman-Taveau & Milner-Bolotin, 2001).

Another central concept of constructivism is the notion of "Disequilibrium," initially introduced by Piaget. Piaget wrote that when learners encounter new knowledge that does not fit within their preexisting framework, it causes disequilibrium (Fosnot, 1996). This condition leads to deeper learning, where the learner's preexisting schema

must be expanded or reorganized. A general principle derived from Piaget's theory is that errors and uncertainties, which occur when learners are confronting new knowledge, are a natural and important part of the learning process (Reagan, 1999). Errors are, therefore, not be minimized or avoided in PBL. The main role of the facilitator in PBL is not to correct students, but to encourage them to test new ideas.

Many constructivists believe that learners build from their prior knowledge to construct new knowledge. A related notion is that the contextualization of learning facilitates knowledge construction and use. In other words, when lessons are in familiar contexts learners are more apt to make meaningful connections between new information and their background knowledge. The use of real world problems and authentic materials in PBL are an application of this notion. They are ways of contextualizing learning so that learners may relate the learning to their life experiences. This contextualization is also justified by issues of knowledge transfer. Learners are more likely to transfer knowledge they gain to new areas if they are able to see a relationship between the instructional context and that of its authentic applications (Larkin, 1989; Oxford, 1990). When concepts are taught in settings that are similar to real-world contexts, learners are better able to apply those particular concepts in future settings and situations (Svinicki, 1998).

Various instructional features in PBL are also supported by research in the social constructivist branch of constructivism. Social constructivism takes influence from the prominent Russian psychologist Lev Vygotsky, who studied the role of language in human development. One of Vygotsky's most important contributions to this area is the notion that mediational means intersect with the individual and social planes (Vygotsky,

1978). In other words, mediational means, which include verbal language and visual arts, interact with our cognition and are socioculturally situated (i.e. influenced by social and cultural contexts). Thus, when we use different types of mediational means to represent ideas and concepts, it helps us to reflect upon them and develop new perspectives (Fosnot, 1996). One application of this theory in PBL is the production of authentic artifacts. The use of different mediums to create an artifact enables students to reflect on and articulate new concepts.

Another important notion forwarded by Vygotsky is the zone of proximal development (ZPD). The ZPD is the distance between the actual development, determined by the learner's independent problem solving, and the potential development, determined by the learner's problem solving with the guidance of an adult, or in collaboration with a more knowledgeable peer (Lantolf & Appel, 1998). Bruner extended this notion to the metaphor of scaffolding. Scaffolding occurs when a more knowledgeable participant creates supportive conditions in which a novice can extend current skills and knowledge to higher levels of competence (Lantolf & Appel, 1998). The facilitator role in PBL entails an application of scaffolding. The facilitator role is to coach, provide modeling, and guide students. Rather than attempting to transmit knowledge, he or she provides these supports in order for learners to extend their skills. At the same time, student centered instruction allows the instructor to receive input that may direct his or her scaffolding. Peer collaboration in PBL also provides opportunities for learners to scaffold one another (Sidman-Taveau & Milner-Bolotin, 2001).

An additional aspect of social constructivism is the notion of situated motivation. Like constructivists, social constructivists believe that motivation is influenced not only by cognitive assessments and individual constructs but also by specific aspects of the learning situations. Consequently, motivation is unstable and varies by context. It is affected by students' values, expectations, and autonomy as well as by the interpersonal relations between students, their peers, and their teachers; the lesson structure; and the types of support that are provided (Wentzel, 1999). Correspondingly, advocates of PBL affirm that the instructional features of real world problems, authenticity, facilitator, formative assessment, and reflection have the potential to affect motivation positively (Blumenfeld et al., 1991).

The role of computer technology in computer-assisted versions of PBL is also reflective of constructivist conceptions. Unlike behaviorist and cognitive conceptions of computer-assisted instruction, the computer is not seen as a drill master or a machine for the practice of isolated skills (Levy, 1997; Warschauer and Healey, 1998). Instead the computer is viewed as a device for scaffolding authentic activity. For example, recent applications of computer-assisted PBL, have utilized computers to access authentic references and resources, make contact with subject experts, and create authentic documents (Blumenfeld et al. 1991; Debki, 1999; Edelson et al., 1999).

DISCREPANCY BETWEEN PROJECT BASED LEARNING DEFINITIONS

The above description of PBL differs in some ways from definitions of project methods in Second Language Acquisition. In SLA, the term "Project Work" (Fried-Booth, 1986) is often used interchangeably with project based learning and project

instruction. Project Work has been defined as "a series of content-based activities which focus around one broad topic" (Eyring, 1989, p.7). For the most part, SLA educators have viewed Project Work as a means of providing students with communicative interaction and of practicing the four skills: reading, writing, speaking, and listening (Eyring, 1989; Becket, 2002). Consistent features that appear in the application of this approach include giving students input into the project theme, taking content from authentic second language contexts, and the generation of student products (Eyring, 1989; Fried-Booth, 1986; Legutke and Thomas, 1991). Most applications of Project Work entail student collaboration, and some emphasis is placed on student centered instruction. On the other hand, project methods in SLA do not typically include the organization of learning around meaningful problems, formative assessment, or reflection; three key constructivist-based features in PBL. The following chart outlines the discrepancies that tend to exist between Project Work and PBL. This outline is based upon recent literature and major studies of project methods.

Table 1: Comparison between Project Work and PBL

Project Work in SLA	PBL outside SLA
Goals: Providing students with comprehensible input and output and practice with reading, writing, speaking, and listening (Eyring, 1989; Beckett, 1999).	**Goals**: Enabling learners to acquire content and skills while also cultivating their metacognitive awareness (Blumenfeld et al., 1991; Barron et al., 1998). Fostering problem-solving, critical thinking, decision making, independence and cooperative working, and procedural skills, as well as in-depth learning of subject matter (Beckett, 1999)
Learning organized around project theme of interest (Eyring, 1989) sometimes "based on life" (Legutke and Thomas, 1991, 158).	**Learning** organized around a real world problem or question (Barron et al., 1998; Edelson et al., 1999).
Student Centered Instruction- student input into project direction and negotiated syllabi (Eyring, 1989; Legutke, 1991).	**Student Centered Instruction** - classes directed by student interests and questions. Choice of project and artifact form. Students are responsible for their own learning (Blumenfeld et al., 1991; Gijselaers, 1996)
Teacher in many roles: manager, facilitator, researcher, participant, monitor (Legutke, 1991, 159), counselor, or consultant (Fried-Booth, 1986)	**Teacher** as facilitator. The facilitator scaffolds student learning through guiding, modeling, coaching (Barron et al., 1998). He or she provides access to information, encourages metacognitive processes, assesses progress, diagnoses problems, provides feedback, evaluates results, and manages the classroom (Blumenfeld et. al., 1991).
Authenticity - Use of authentic contexts (Beckett, 1999; Eyring, 1989)	**Authenticity -** Use of authentic problems, questions, references, resources, tools, artifacts, and audiences (Blumenfeld et al. 1991; Edelson et al., 1999)
Collaboration in most cases (Legutke and Thomas, 1991; Lawrence, 1997)	**Collaboration -** Organized teams are an essential component. Students manage group work. (Barron et al., 1998; Torp and Sage, 1998).
	Assessment – f**ormative assessment** is a key feature (Barron et al., 1998; Blumenfeld et al., 1991; Edelson et al., 1999; Williams and Hmelo, 1998).
	Reflection is essential (Barron et al., 1998; Edelson et al., 1999; Williams and Hmelo, 1998).

As shown in Table 1, the main differences between Project Work and PBL are in the goals, organization of learning, extent of student centered instruction, teacher role, type of collaboration, assessment, and reflection. In addition to the practice of skills, PBL is a means of gaining content knowledge, and increasing learner metacognition. In contrast, the goal of Project Work is to practice skills and provide communicative interaction. Recent applications of PBL entail projects that are stimulated by real world problems or questions whereas projects in Project Work usually begin with project themes. For example, in Petrosino's 1995 application of project based learning in a sixth grade science class, the project of making rockets was begun with a letter from NASA requesting the design rockets that would shoot the highest. In contrast, in Hilton-Jones's 1988 application of Project Work, German language students chose projects of interest relating to a local shopping mall.

Unlike Project Work, student centered instruction in PBL also includes an emphasis on ownership, where the learner takes responsibility for his or her own learning. Moreover, the facilitator role in PBL entails specific types of scaffolding while the teacher role in Project Work is less consistent and relatively vague. In PBL, authenticity is achieved through the use of authentic materials, problems, and artifacts, but in Project Work authenticity is only addressed through the incorporation of language from authentic materials and contexts. Collaboration is an essential part of PBL that entails the student management of teams and learner accountability. In Project Work, collaboration has been less formalized and consistent. Most importantly, formative assessment and reflection are essential components of PBL that are rarely discussed in the literature on Project Work in SLA. Fried-Booth mentions feedback sessions, group

analysis, and learner self-monitoring (1986), but there are few examples of this or other types of formative assessment in practice. In addition to the difference of applications in and outside SLA, research on project methods is much less prevalent in SLA than it is in other disciplines. The next section provides an overview of research on project methods outside SLA, followed by a discussion of research on project methods in SLA and CALL

PROJECT BASED LEARNING RESEARCH IN OTHER DISCIPLINES

PBL has been widely researched in disciplines outside SLA. Researchers in the sciences have found PBL to be effective in enhancing student motivation and fostering higher order thinking and problem solving skills (Krajck et al. 1998; Polman, 2000; Stites, 1998). Over 20 years of evaluation of problem-based methods in medical schools showed that students in problem-based programs performed equally to students in traditional programs on standard tests, and outscored those in traditional programs on tests of clinical problem-solving skills (Barrows, 1996; Vernon and Blake, 1993). Empirical studies in K-12 education suggest that students in PBL classrooms experienced better affective outcomes and deeper learning than students in traditional classrooms (Au, K and Carroll, J.H. 1997; Edelson et al., 1999; Williams & Hmelo, 1998). A number of interdisciplinary studies have also demonstrated the effectiveness of PBL when combined with computer technology (Edelson et al., 1999; Barron et al., 1998; Koschmann, T., Kelson, A.C., Feltovich, P.J., & Barrows, H.S, 1999; Schwartz, Lin, Brophy, & Bransford, 1999; Williams, Burgess, Bray, Bransford, Goldman, and The Cognition and Technology Group at Vanderbilt, 1998). One of the most important points that can be taken from previous research is that it must be implemented carefully in order to achieve

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such positive results (Barron et al., 1998; Blumenfeld et al., 1991; Cognition and Technology Group at Vanderbilt [CTGV], 1994; 1997; Milner-Bolotin, 2001; Petrosino, 1995; Torp and Sage, 1998). Another pertinent message is that computer technology can facilitate and enhance the implementation of PBL (Edelson et al., 1999; Barron et al., 1998; Harrison, 1999; Koschmann et al., 1999; Schwartz et al., 1999; Williams, Burgess, Bray, Bransford, Goldman, and The Cognition and Technology Group at Vanderbilt, 1998). Three important studies, Blumenfeld et al. (1991), Barrons et al. (1998), and Edelson et al. (1999), provide guidelines for the successful implementation of PBL and discuss the supportive role computer technology can play. These studies have important implications for future applications of the approach.

In their influential work, Blumenfeld et al. (1991) outline affective factors that must be considered for successful implementation of PBL. They also discuss the ways in which computer technology can help address important motivational issues. Blumenfeld et al. assert that early attempts to spread project and discovery learning approaches were not successful because there was a failure to address major challenges such as motivation. For PBL to be successful, learners need to be cognitively engaged with a subject matter for a substantial amount of time. They need to be motivated to work strategically on complex tasks. The inclusion of authentic problems is not enough to stimulate this level of motivation. For learners to be sufficiently motivated, they must perceive projects to be interesting and valuable, feel they are capable of engaging in and completing the project, and be motivated by the learning process rather than by the outcome or final grade. Learning orientations, feelings of competence, and interest and value all play a role in learner motivation. The attention to these affective factors is what differentiates PBL

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from earlier project and discovery based methods. Blumenfeld et al. provide a number of examples and guideline.

To encourage learning rather than performance orientations, Blumenfeld et al. (1991) recommend formative assessment, reflection, and cooperative learning strategies. To promote feelings of competence, they suggest different types of scaffolding. Information, examples, and representations may be used to assist learner understandings. Tools and resources can help learners to carry out tasks as well. Six elements that have been shown to increase the interest and value of projects are:

1) Task variation and novel elements
2) Authentic problems of value to students
3) Challenging problems
4) Closure in the creation of the artifact
5) Choices about the type and mode work
6) Opportunities to work with others

One of the major findings reported by Blumenfeld et al. (1991) is that the application of the above strategies may be facilitated in a number of ways through the use of computer technology. In the following section, I summarize some of the ways that are relevant to this study

First of all, the internet can be used to facilitate the implementation of PBL. The wide range of informational sources available through the Internet, make it easier to offer choices in topic, task, and level. The Internet can be used to increase authenticity; providing access authentic resources, real audiences, and professional tools (Scardamalia and Bereiter, 1991). The opportunity to work with outside audiences and to use authentic resources increases the interest and value of projects. Multimedia technology can provide useful scaffolds as well. For example, the representation of concepts in a variety of

modalities can help to improve student understanding (Kozma, Russell, Johnston, and Dershimer, 1991). Students can create their own representations in a variety of media and organize information using database systems. The ability to explore and manipulate ideas enhances student learning (Harel and Papert, 1990; Kozma et al, 1991). Similarly, application software such as the word processor and desktop publishing programs can reduce labor and busy work associated with higher level tasks. These technological scaffolds can help promote learner confidence in their ability to understand concepts and carry out complex projects. Finally, word processors can make correction and multiple revisions easier. Overall, the computer can be utilized to help sustain interest and value, promote learner's feelings of competence, and support a focus on the learning process. These three factors affect the overall motivation of learners in PBL.

Barron et al.(1998) further outline critical design features in PBL. The authors worked for over three years on the planning and evaluation of project and problem based approaches. In their research, they sought to address a main problem experienced with earlier project attempts: the temptation to fall into "doing for the sake of doing. As Barron et al. (1998) explain, learners get "caught up in the action without appropriate reflection" and the opportunity for deep learning is missed (p. 274). They do not understand the purpose of their projects and are unable to connect their activities to instructional goals. With this problem in mind, Barron et al. developed and tested four design principles for PBL:

1. Learning-appropriate goals,
2. Scaffolds that support both student and teacher learning,
3. Frequent opportunities for formative self-assessment and revision, and
4. Social organizations that promote participation and result in a sense of agency, or self-efficacy (Barron et al., 1998, 273).

In a study involving five fifth-grade math classes, Barron et al found that these four principles worked together to promote "doing with understanding." The students acquired content and skills, increased their metacognitive awareness, and became more autonomous learners (Barron et al., 1998). The following section provides an overview of the four design principles discussed by Barron et al. (1998) and a summary of the study in which they were applied.

Principle 1: Learning Appropriate Goals

To begin with, the project themes in PBL need to be connected to learning appropriate goals that allow learners to see the relationship between projects and the content knowledge that needs to be acquired. Without learning appropriate goals, students are liable to get lost in the doing and to miss primary lesson objectives. For example, Petrosino (1995) worked with 6th grade science students on a "Mission to Mars" curriculum that included the building and launching of rockets. He found that the simple building of rockets in the project based class did not result in students' understanding of what it took to build an effective rocket, but when students were asked to respond to a specific "Request for Design Plans" from NASA, they learned how to carry out controlled experiments and to measure rocket trajectories (Petrosino, 1995). The request for design plans gave students a set of goals that could only be accomplished through certain types of learning and practice, and it helped them to develop an awareness of the purpose of the project, thus they were "learning appropriate."

The Spanish language project, "El Mundo Hispano Webquest" (The Hispanic World Webquest) is another example modeled after this design. To initiate the project, students were given a request from a travel agency for the development of a travel itinerary in Argentina, Mexico, or Spain. The request contained specifications such as the need to schedule a variety of activities, find room and board, and make realistic plans (time and distance wise). These specifications were a reflection of the lesson objectives that included learning vocabulary associated with travel and learning about the destination country (its geography, landscape, food, transportation services, or tourist attractions) (Sidman-Taveau and Milner-Bolotin, 2001).

Principle 2: Scaffolds to Support Student and Teacher Learning

A number of teacher challenges have been outlined through research on PBL in mainstream disciplines. Teachers have difficulty balancing work on projects with reflections on process, incorporating student knowledge without losing sight of lesson goals, and sustaining student interest in a way that promotes understanding (Schauble, Glaser, Duschl, Schulze, & John, (1995). Barrons et al (1998) found that many of these challenges could be addressed with different types of scaffolds.

One means of scaffolding students is to begin open ended projects with the presentation of authentic problems. This use of problem based learning to scaffold projects has been found to increase the overall quality of learning (Moore et al. 1996; Schwartz et al., 1999; Vye, Schwartz, Bransford, Barron, and Zech, 1997). A number of video simulations were created for this purpose in the Learning Technology Center at Vanderbilt University. One notable example is the video "Blueprint for Success"

(Blueprint), which is part of a larger "Jasper Series." Blueprint presents a problem scenario in which an architect is given specifications for the design of a playground. The scenario served as a scaffold for a fifth grade math class which took on the real project of designing a playhouse for a community center. The video helped the fifth graders to approach their real project systematically using expert tools and geometrical concepts. In addition to presenting problem scenarios, scaffolds can be embedded into instruction. In the Jasper Series this is done through conversations and modeling (CTGV, 1997).

Principle 3: Frequent Opportunities for Formative Assessment

Instructors need to continually assess what students have and have not learned in order to be able to adapt their teaching to student needs and assure that curricular goals are met. Students also benefit from an understanding of their learning process. If they are able to assess their knowledge and skills, they may use the information to revise their process and focus their learning. To achieve these goals, Barron et al. (1998) suggest student self-assessment and peer assessment. Specific cycles of assessment, feedback, and revision can also be organized around student generated products.

Principle 4: Social Organization

To promote active, reflective learners, Barron et al (1998) suggest five different social organization strategies:

    1) small group interaction,
    2) peer review,
    3) models,
    4) norms of individual accountability for collaborative work
    5) the involvement of outside audiences.

Small group interaction and peer review provide opportunities for students to articulate their process and to scaffold one another. Models connect learners to experts and others who have contemplated similar problems. Norms of individual accountability are specific goals that are set for each learner in a group. They promote student involvement in the learning process and can be used to encourage collaboration. The involvement of audiences outside the classroom makes student work more meaningful. When outsiders are involved, effective communication is required. Learners also have the opportunity to receive outsider feedback, which can often bring new insights. Moreover, the focus on presenting for an outside audience can unite students and teachers in a common cause.

Barrons et al (1998) applied the above design principles in a study involving 5 fifth grade math classes. For the application, they developed an instructional intervention called SMART. SMART entailed the use of several different types of technology. The Blueprint for Success video was used to present the problem scenario and provide embedded teaching scenes. A program called The Jasper Challenge was also created to provide additional scaffolding and just-in-time instruction. The results of the study are impressive. The students improved their understanding of geometrical concepts, demonstrated a willingness to revise their work, showed enthusiasm, and appeared to maintain their interest throughout the project. In interviews a semester later, 50% of the students spontaneously recounted the meaningfulness of the project experience. These results combined with previous research in the Learning Technology Center at Vanderbilt University attest to the value of the four principles outlined by Barron et al. (1998)

Edelson, et al., (1999) is another important work. Researchers from the Center for Technology in Learning at the Stanford Research Institute and School of Education and

Social Policy at Northwestern University worked for over 6 years on the investigation of technology-supported inquiry learning. Building upon the ideas of Blumenfeld et. al. (1991) and Barron et al. (1998), they designed technology-supported inquiry based curricula for high school science classes. The researchers used an interactive design and evaluation process testing the curricula in laboratory settings and public school classrooms. Through this research, they identified major challenges and ways they could be addressed through technologically supported strategies. The major challenges found were in sustaining student motivation, making investigation techniques accessible, providing opportunities for learners to develop and apply understandings, and enabling students to manage complex activities. In response to these challenges, Edelson et al. developed six strategies:

1) use meaningful problems to motivate inquiry;
2) create activities to bridge the gap between the practices of students and the practices of experts;
3) stage activities by sequencing tasks and presenting techniques and stimuli for students to access their background knowledge;
4) create a supportive user interface to scaffold learners;
5) develop record-keeping tools;
6) and embed information sources in investigation tools.

These strategies were applied with the support of computer technology. They used computers to make authentic resources and information accessible, to create investigative and record keeping tools, to embed techniques and information sources into the tools, and to design a customized interface. Although further design modifications and more formal evaluation are needed, the researchers found that the application of these technologically supported strategies helped, overall, to minimize the challenges associated with inquiry-based learning (Edelson et al, 1999).

Together, Edelson et al.(1999), Blumenfeld et al. (1991), and Barron et al. (1998) provide us with an array of strategies for the successful implementation of project, problem, and inquiry based approaches. They also alert us to past challenges with project methods and illustrate the role technology can play in addressing those challenges. PBL is an application of this research. It is a constructivist-based computer-assisted approach which corresponds well to theory and needs in the field of SLA in the twenty first century.

In sum, PBL is much more than the use of projects for the practice of skills. It is a carefully structured methodology with important constructivist-based features: an organization of learning around meaningful problems, student centered instruction, collaboration, teacher as facilitator, and an emphasis on authenticity, formative assessment, reflection, and the production of authentic artifacts. Additionally, Computer technology can be employed as a support for learning and instruction in PBL.

SECOND LANGUAGE ACQUISITION THEORY AND PBL

In his 1997 article, Barson writes:

> There is no denying the importance of coming to terms with grammar, syntax, lexical issues and pronunciation or intonation problems. However, it remains unproved, in spite of long-standing academic tradition, that making these the primary focus of study – in a sense by 'subjectifying' them (treating them as content or subject matter) –will necessarily produce the desired effect. (p.3)

Barson goes on to suggest that the merit of the traditional focus on form, or form driven curricula, has not necessarily been demonstrated in the goal of language acquisition. How then do educators enable learners to acquire language? Barson proposes

transforming the classroom to provide a variety of meaningful contexts for language discussion and real opportunities for the negotiation of meaning. He says that the goal driven activities of project based learning are one way to link language practice to purposeful discourse (p. 4). Barson's article, which provides justification for a movement away from the traditional "focus on forms" towards project based methodologies, is reflective of recent conceptions of language and language learning.

Theories of language learning have shifted dramatically over the last century. Second language researchers have moved beyond behaviorist concepts of language learning prevalent in the 1950's and 60's and expanded upon cognitive views of learning presented in the 1960's. Researchers found little evidence to support the behaviorist belief that language is best learned in parts through habitual exposure, imitation, and reinforcement (Edelsky et al., 1991). From the cognitive perspective, language learning is not a conditioned response but an "active process of generating and transforming knowledge" (Kern and Warschauer, 2000. p.4). Many educators responded to cognitive views of language learning with an increased focus on grammar rules, but Krashen (1981) challenged the effectiveness of this approach. He theorized that language acquisition, a subconscious process in which learners develop a feel for the language, occurs not as a result of grammatical study, but as a result of comprehensible input, language directed at a learner that the learner can understand (Ellis, 1994). The latter part of Krashen's hypothesis was not widely accepted in the field.

Further research showed that language acquisition also depends upon comprehensible output, communicative opportunities for meaningful negotiation and interaction (Swain, 1995). In other words, it was found that learners acquire language by

interacting with others in situations where communication is meaningful and where the drive to understand one another forces participants to modify or restate language that had led to communication breakdown (Ellis, 1999). This process of modification enables learners to reconstruct their knowledge base and assists in the overall acquisition of the target language (Swain and Lapkin, 1995). In his Interactive Hypothesis, Long (1996) suggests that the conversational interaction and negotiation that causes a native speaker to adjust his or her message "facilitates acquisition because it connects input, internal learner capacities, particularly selective attention, and output in productive ways" (Long, 1996, pp. 451-452). That is, the negotiation work helps to link what learners hear with internal learners' abilities such as choosing a specific area of focus and what learners produce. Another of Krashen's hypotheses: the Affective Filter Hypothesis (1981) is more widely accepted. This hypothesis states that affective variables such as motivation, self-confidence, and anxiety play a role in second language acquisition. Krashen claims that learners with high motivation, self-confidence, a good self-image, and a low level of anxiety are more likely to succeed in second language acquisition. Low motivation, low self-esteem, and high anxiety can work together to increase the affective filter and form a "mental block" that prevents comprehensible input from being used for acquisition (Krashen, 1985, p.100) The notion that individual learner variables affect the language learning process continues to be a major theme in Second Language acquisition literature. Second language researchers agree that learner variables such as strategy use and motivation play a particularly large role in the learning process (Ellis, 1994; Oxford, 1990). The different aspects of individual motivation have been a focus in second language research for the past twenty years and, more recently, scholars have

concentrated on the role of teachers and instructional contexts in fostering learner motivation (Moss and Ross-Feldman, 2003).

With shifting theoretical conceptions, language is increasingly being seen as an interpersonal activity that must be studied as a whole within linguistic, social, or situational contexts (Warschauer & Kern, 2000). The Whole language philosophy has gained further acceptances within SLA, for example. Advocates of the Whole Language Philosophy believe that the oral, written, gesture, syntactic, semantic and pragmatic subsystems of language are "interdependent and inseparable" (Edelsky et al., 1991, p.11). Language is seen as a complete system of signs and symbols and all of its elements are deeply social (Edelsky et al., 1991). In light of these views, language instruction is not just a means of providing comprehensible input, but also a means of helping students to enter into authentic social discourse situations and discourse communities (Kern and Warschauer, 2000, p.5).

CONSTRUCTIVIST LEARNING AND SECOND LANGUAGE ACQUISITION THEORY

These recent trends are supported and, in many cases, informed by constructivist and socio constructivist theories of learning. The attention to learner variables and the focus on learner interaction and output are supported by the constructivist notion that learners must actively construct their knowledge (Fosnot, 1996; Reagan, 1999). The recognition of the importance of negotiation and repair in language learning corresponds to the constructivist notion of disequilibrium. It is believed that disequilibrium, when learners encounter new knowledge that does not fit within their preexisting framework and are forced to expand or reorganize their schema, leads to deeper learning (Fosnot,

1996). A related notion is that errors and uncertainties, which occur when learners are confronting new knowledge, are an important part of the learning process (Reagan, 1999).

Social constructivism is also playing an increasingly important role in the field of second language acquisition (Lantolf & Appel, 1998; Reagan, 1999). Vygotsky's notion of the zone of proximal development (Lantolf & Appel, 1998) and Bruner's extension of this notion to the metaphor of scaffolding have had substantial influence in the field. One example is the way in which these theories have stimulated investigation of peer collaboration in second language classrooms. Vilamil & de Guerrero (1998), for instance, investigated peer collaboration among Spanish speaking ESL students. They found that peers who are close in level can effectively scaffold one another and the scaffolding can be a mutual two-way process. Socio constructivist theories about learning and language have also informed the Whole Language Philosophy, a first language philosophy which has recently been adopted in second language contexts. Socio-constructivists believe that learning takes place in a socio cultural context (Lantolf & Appel, 1998) and that language is socio culturally situated (influenced by social, cultural, historical and political contexts) (Wertsch, 1991). A principle derived from these theories is that language must be studied in context and learned through social interaction. Together, this interpersonal view of language learning, the comprehensible output and interaction hypotheses (Swain, 1995; Long, 1996), and the recognition of the important roles of learner variables all represent a significant departure from earlier behaviorist conceptions of language learning.

Change in SLA teaching methods has been less dramatic and not so clear cut at the practical level. Behaviorist concepts of learning have lingered in the continued preference for audio lingual, grammar-translation, form focused, and academic style techniques. Communicative style teaching which emphasizes authentic language use and communicative classroom exchanges has spread since the 1970's, but many applications of the communicative method are merely a combination of grammatical study and imaginary role play (Cook, 1999). Recent trends towards task and content based instruction (Prabhu, 1987; Snow, 1991) are more promising. Task-based teaching provides opportunities for learner interaction and meaningful communication (Moss and Ross-Feldman, 2003). However, task-based instruction is often designed primarily to assist learners in the acquisition of specific grammatical forms (Shetzer and Warschauer, 2000). Content based instruction, where the activities of a language class are specific to a particular subject matter, is a viable means of integrating the four skills, but the method is often lacking in impetus for active student involvement and learner autonomy (Stoller, 1997). Research is needed in SLA to explore methodologies which are a clearer application of current theory.

CURRENT NEEDS IN SECOND LANGUAGE ACQUISITION

New information technologies will transform notions of literacy, making online navigation and research, interpretation and authoring of hypermedia, and synchronous and asynchronous on-line communication critical skills for English as a second language learners (Warschauer, 2000, 511).

In addition to new theories of language learning, a host of new skills are required for second language learners in the information age. With the increasing presence of

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information technology in academic and professional realms, high order thinking skills are needed more than ever (ACTFL, 2001; Derry, 1990; Gonglewski, 1999). In particular, second language learners need to be able to interpret cultural materials in multimedia formats (Furstenberg et al., 2000; Kramsch and Anderson, 1999). They need to know how to use web resources to obtain and present information in their target language (Bicknell, 1999; Waltz, 1998; Warschauer and Cook, 1999). The ability to navigate mindfully and critically evaluate electronic texts is also crucial (Landow, 1998; Reinking, 1997). Furthermore, the advent of information technology has transformed our notions of literacy. To be proficient in a language today also entails a certain level of Electronic Literacy. Electronic literacy includes knowledge of how to use computers to interpret and express meanings: to find, organize, and make use of information; and to read and write using electronic media (Bicknell, 1999; Reinking, 1997; Shetzer and Warschauer, 2000; Warschauer, 1999). Writing now includes online communication such as electronic messaging that has unique properties of its own (Warschauer, 1997). Reading hypertext demands new skills. Some of these include the co-construction of text and centering one self while moving among any number of authors on a given website. Writing hypertext often requires web editing skills, the manipulation of electronic images, and collaborative work (Landow, 1998; Shetzer and Warschauer, 2000).

In addition to the needs for higher order thinking skills and electronic literacy, there is a greater need today for autonomous learners. "Flexible, autonomous lifelong learning is essential to success in the age of information" (Shetzer &Warschauer, 2000, p.4). Efficient learners rather than knowledge collectors are needed (Derry, 1990). Language is required less for simple acts like direct translation (which is now facilitated

by software and the overall globalization of our communities) and more for international collaboration and negotiation, and the interpretation of constantly changing information. Language learners have to learn to access online resources and tools, to sort through the abundance of information available through the World Wide Web, to work on individual and collaborative projects, and to take charge of their learning (Shetzer and Warschauer, 2000). The development of learner autonomy and electronic literacy is especially important in the field of English as a Second Language (ESL). In the United States and United Kingdom, roughly half the employed population is involved in information-processing activities and information technology is increasingly present in academic and social realms (Castells, 1993; US Bureau of Labor Statistics, 2005). Recently, SLA scholars have suggested that project based learning has the potential to address these needs (Beckett, 2002; Lee, 2002; Shetzer and Warschauer, 2000; Wrigley, 1998), but research on PBL in SLA is lacking.

PROJECT BASED LEARNING IN SLA

Project based learning, also known as "Project Work," was not popularized in the field of Second Language Acquisition until the 1980's. Beckett (1999) claims the trend was a response to the inadequacies of Krashen's input hypothesis (1981). It also seemed to be part of the movement towards communicative style teaching. SLA educators saw project work as a means of offering communicative interaction that would help language learners to develop fluency and accuracy. Fried-Booth was a forerunner of the Project Work trend. Her 1982 book "Project Work" was the first to describe an application of project learning in SLA. In this application, ESL students in Bath, England designed a

guide for disabled tourists visiting the city. Fried-Booth (1986) was also one of the first practical resource guides to the approach in SLA. In the guide, Fried-Booth defines project work as a means of bridging the gap between language learned in the classroom and language used outside the classroom. The method she described is student centered. Learners are involved in the choice of topics, project types, and formats. Her interpretation of the method emphasizes authentic language use. The planning, discussion, and evaluation of projects are all seen as opportunities for integrating practice of reading, writing, listening, and speaking. The teacher role is one of a counselor or consultant. Assessment is also non-traditional: work is monitored through feedback sessions, group analysis, and learner self-monitoring (Fried-Booth, 1986). Fried Booth's description of Project Work is analogous to PBL, but there has been quite a bit of variation in the application of this approach in SLA.

Following Fried-Booth's publications, several teacher accounts of Project Work in SLA were produced in Europe (Carter & Thomas, 1986; Coleman, 1992; Hilton-Jones, 1988; Legutke, 1984). These accounts demonstrate a variety of applications of Project Work. In Carter and Thomas (1986), adult ESL students in Britain taught at a local junior high school. In Coleman (1992), second year French language students at a university in England produced French language videos on a cultural topic of their choice. In Legutke (1984 & 1985), 11 year old ESL students in Germany interviewed native English speakers and searched for English language texts at an International airport. In Hilton-Jones (1988), West German teenagers in a language immersion course in England, completed weekly projects relating to a local shopping center.

In these teacher accounts, there is wide consensus that Project Work provides an opportunity for the authentic practice of reading, writing, speaking, and listening and, in some cases, cultural learning (Beckett, 1999; Carter & Thomas, 1986; Hilton-Jones, 1988). Hilton-Jones (1988) reported that language learning takes place even when other goals such as content and cultural learning or cognitive development are the driving force. The teachers also report a number of positive affective outcomes: student enjoyment (Coleman, 1992; Legutke, 1984) and satisfaction in having achieved something tangible (Coleman, 1992); and increased student confidence in using and understanding the target language with native speakers (Carter & Thomas, 1986; Legutke 1984). Motivation is another common theme. Teachers claim that student choice of project themes fosters a sense of commitment (Coleman, 1992; Fried-Booth, 1986). Peer relationships and peer pressure, which develop during group work, increase motivation (Coleman, 1992; Fried-Booth, 1986; Legutke, 1984; Legutke, 1985). Contact with authentic settings in the target culture cultivate interest (Hilton-Jones, 1988). In addition, Coleman (1992) and Fried-Booth (1986) discuss the overall fostering of learner autonomy.

Project Work is not without difficulties, however. The second language teachers attest to a number of instructional challenges, learner issues, and assessment problems. They note that incorporating authentic materials into class work is not sufficient in itself; techniques are needed to encourage purposeful use of authentic texts (Coleman, 1992). Moreover, the approach requires a good deal of flexibility (Hilton-Jones, 1988; Fried-Booth, 1986) as well as a substantial amount of planning (Hilton-Jones, 1988). Instructors also mention the problem of learners using their first language extensively

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during group work (Coleman, 1992). Grading presents additional challenges. Colemand (1992) reports that there is often a wide variation in the number of hours students spend on their projects. Students who are highly invested often exceed the expected time making it difficult to provide them with the appropriate amount of credit. Furthermore, because of the student "investment" in projects, teachers have the challenge of being both sensitive and thorough in their feedback to students. "Project fatigue" is another issue that emerged when the same "project" form, a written report, was assigned repeatedly for the same classroom audience (Hilton-Jones, 1988).

In these early teacher accounts, there is little mention of the development of higher order thinking skills and strategic behavior, two primary goals of PBL in disciplines outside SLA (Beckett, 1999). The study by Carter and Thomas (1986) is one exception. They describe an improvement in "student strategic competence," an element of the learner's performance in the target language (p. 202). For example, learners in the project oriented class reported increased confidence in their ability to deal with the unpredictable language in authentic sentences. Moreover, some of their native conversation partners noticed, "a well-developed ability to paraphrase difficult or unknown words, an ability to develop statements until the message was clear, and a high degree of precision and an absence of circumlocution." Others commented on the students' use of "appropriate turn-taking procedures" (Carter & Thomas 1986, p.202). This discussion of "strategic competence" represents a broader interpretation of the potential of the project approach.

Overall however, comparisons between the results of Project Work and PBL are problematic. One reason is that the two applications are different enough that we cannot

expect to achieve the same goals. For example, much of the Project Work in SLA lacks features that have been found to be essential to the successful implementation of PBL. The following two accounts exemplify this dilemma.

Hilton-Jones (1988) employed project work in an English as a foreign language context. German students visiting England wrote reports on topics relating to a local shopping center. Students were not offered any choice about the form of these reports. Hilton-Jones notes in retrospect that students should have been encouraged to use formats other than writing because of the resulting "project fatigue." Although these students were working with an authentic environment and were allowed to choose a topic of interest, they did not have an overall driving question or problem around which to center their learning. Furthermore, there is no mention of formative assessment or formalized reflection. Hilton-Jones states that students were given copies of all projects in order to be able to reflect upon them, but there was no formalized or guided reflection. Within this context, it would not be realistic to expect increased learner metacognitive awareness nor does it seem reasonable to anticipate high levels of motivation and sustained interest. Motivation and metacognitive awareness are principle goals in PBL, but they are dependent upon features such as organization of learning around real world problems, use of authentic audiences, choice of project form, and the features of formative assessment, and reflection.

The account of Coleman (1992) is another example of the problematic comparison between Project Work and PBL. Coleman organized video projects in a college French language class. Students were asked to produce videos in French on a cultural topic of their choice. Prior to beginning the project, students were given relevant

technological and linguistic training. After completing the project, students presented their videos and turned them in with written dossiers. Coleman states that in addition to the practicing of the four skills, his aim was to help students "develop transferable skills such as assessing and organizing available time and resources, planning, working in a team, and presentation skills" (p.35). These aims are similar to those mentioned for PBL. However, Coleman notes that sufficient time was not given for feedback, review, and reflection. Students were on their own for most of the project construction. Moreover, he admits that half the grades on projects were given solely on linguistic content. Thus, it seems that little attention was given to the learning and production process. This lack of time for the assessment of process makes the comparison between this Project Work application and PBL difficult. How can we expect to see the improvement of higher order skills and learning processes, if no attention is given to the way students go about completing their projects? How can we expect students to develop awareness of their process, if only their final product is assessed?

Three recent articles bridge the theoretical gap between interpretations of project methods in and outside SLA: Moss and Van Duzer (1998), Stoller (2002), and Wrigley (1998). These scholars note a broader range of purposes for PBL in SLA: contextualizing learning (Moss and Van Duzer, 1998), integrating language and content instruction (Stoller, 2002), and providing opportunities for meaningful learning and authentic communication (Wrigley, 1998). They outline the importance of collaboration, authenticity, and reflection, and clearly describe the non-traditional facilitator role. Wrigley also explains the Constructivist basis for the PBL methodology. Citing various interdisciplinary applications of PBL and teacher accounts of Project Work, these

scholars claim that students gain important skills such as the ability to work collaboratively, negotiate, make points, and manage their work by planning, organizing, and distributing labor (Moss and Van Duzer, 1998). PBL is said to engender enthusiasm, rejuvenate classes, motivate students, boost learners' sense of self-efficacy, and improve learner attitudes (Wrigley, 1998). However, there is little empirical research to back these claims in SLA.

To date only three empirical studies, Beckett (1999), Eyring (1989), and Turnbull (1999) have been conducted on project methods in SLA. Overall, these studies tell us little about specific types of student learning with PBL, and they demonstrate a need to extend our knowledge of the specific teaching issues which emerge with PBL in second language settings. The following section provides a brief summary of the three studies.

Eyring (1989) conducted a case study in an ESL classroom at the University of California, Los Angeles. Participants included two ESL teachers and three ESL classes. Students were of different ages and a variety of nationalities (from Asia, Europe, and Latin America). The Project Work method was implemented in one class and compared to two control groups where traditional methods were applied. In the project class, students worked on a guide to the city of Los Angeles. The syllabus was negotiated and students worked collaboratively in groups. However, there is little discussion of formative assessment and reflection, or other measures used to scaffold student progress.

Eyring's research focuses on teacher and student evaluations of Project Work. The results are somewhat contradictory to the generally positive accounts in SLA literature. On the one hand, students in the project group reported higher satisfaction than students in the control group, and there were no significant differences between

performance in the project based class and performance in the two control groups. The teacher also commented on the development of student presentation skills and fluency. On the other hand, Eyring (1997) notes that the greater satisfaction reported in the project group seemed to be related to non-academic goals such as having less work. In addition, neither the teachers nor the students seemed fully satisfied with the experience. Eyring states that students experienced neither solidarity nor empathy and the concept of autonomy was difficult for them to grasp. Moreover, implementation of the method proved challenging. The teacher found the creation of negotiated curriculum in project work to be difficult; it required more work than traditional instruction. She had to take on the demanding roles of material developer, resource person, and manager, and assessment techniques had to be adjusted. Eyring concludes that the study results suggest Project Work was not a feasible means for ESL teaching at the university level. However, she also notes that more research is needed to capture student and teacher viewpoints and to learn more about the optimal conditions for implementing Project Work (Eyring, 1997).

In contrast, Turnbull (1999), who implemented a study with middle school French students, found project based learning to be a viable alternative for second language instruction. Turnbull conducted case studies of four middle school French classes (Grades six through nine). One of the goals of this study was to compare the language proficiency outcomes of two types of project based classes: "multidimensional" project based learning (integrating linguistic, cultural, communicative and general education goals with an experiential focus); and "unidimensional" project based classes (focusing primarily on grammar). Turnbull found that the multidimensional classes performed equally well, if not better in some cases, on several different measures; however, he also notes several

confounding factors. In the multidimensional classes, teachers used the target language more, did more to integrate a focus on form, and involved students in curricular decisions to a greater extend. More than anything, the study showed that teachers implement project based learning very differently depending on their own beliefs and learning and instruction. Turnbull (1999) concludes that "the results also suggest that a multidimensional project-based curriculum provides a useful framework in which a focus on form can be authentically integrated with a motivating and interesting communicative experiential focus." (561). Unfortunatly, there are few common threads between the studies conducted by Eyring and Turnbull. They have different settings (university ESL classes versus Middle School French) and foci: teacher and student evaluations versus unidimensional and multidimensional project based learning.

Beckett (1999) provides a sounder basis for comparison with Eyring's study. Beckett investigated project based learning in four Canadian secondary school ESL classes including 73 participants from China. Students investigated English language words and wrote reports. They also conducted a survey on the issue of child abuse. Like Eyring, the researcher focused on teacher and student goals and evaluations of project based learning. Beckett found positive teacher evaluations of the method, but mixed student responses. A discrepancy was also found between teacher and student goals and evaluations of project based learning. The combined results of Eyring and Beckett imply that teacher evaluations of project based learning are not necessarily reflective of student viewpoints and, therefore, do not provide a complete picture in themselves. Further research must be conducted in order to better understand the actual development that occurs with project methods and this can only be done through an analysis of both

viewpoints. In addition, the findings of Beckett and Turnbull suggest that the definition and practice of project methods varies considerably. In order to corroborate or disprove theoretical claims, and build upon findings in disciplines outside SLA, we need additional studies in SLA that focus on a more clearly outlined and comprehensive PBL approach. Investigations of the computer-assisted PBL method are also required. Computer technology is of growing importance in SLA classrooms today, PBL has been shown to work effectively with computer technology (Barron et al., 1998; Blumenfeld et al., 1991; Edelson et al. 1999).

PROJECT BASED LEARNING IN CALL

This study emerges in part out of dissatisfaction with traditional classroom instruction. It also emerges out of optimism towards the potential of alternative computer-assisted language learning methods. Theoretically, SLA educators know that language learners need linguistic input, interaction, and comprehensible output. We know that authentic contexts and materials are motivating and provide cultural and linguistic clues for learners. It is also believed that learner interest in becoming a part of a target language community can facilitate language learning. Yet, so many SLA educators continue to organize curricula by discrete points, to de-contextualize language, and to base language objectives upon testing criteria. In theory, we believe language is a social system and that language learning is profoundly social process. Scholars say the role of a teacher is to assist the language learning in entering into social discourse communities. However, few of our language programs work to connect second language learners to the target language speaking communities at large. Few of our foreign language programs

make provisions for our foreign language learners to make contact with native speakers and communities. Fifty years ago, foreign language educators might have been able to say we simply do not have access to authentic input from the target language and culture or there is no feasible way to put learners in contact with native speakers in the target community. This is not the case today. In educational settings where computer technology is an option, access to linguistic and cultural resources is no longer an issue.

Computer technology today enables learners to enter into online discourse communities; to read, publish, and correspond with target language speakers. Websites, chat rooms, videos, and other multimedia provide at least a virtual taste of numerous target language cultures. SLA educators have begun to utilize these capabilities in a myriad of ways. SLA literature within the area of computer-assisted language learning (CALL) is replete with exciting ideas for integrating technology. What kinds of methodologies are we using with this technology? In the last two decades, a number of educators and researchers in CALL have looked, among others, at project methodologies. Project methods which reemerged in SLA in the 1980's (Fried-Booth, 1986, Eyring, 1989) reemerged in the 1990's within the area of Computer-Assisted Language Learning (CALL), Barson (1997), Wrigley (1998). There are teacher reports of computer-assisted project based methods in the area of English as a second language, English as a foreign language, French, German, Polish, and Spanish. Nonetheless, there is a good deal of variation in the applications of project based learning and little empirical research has been conducted. Moreover, computer-assisted project methods are far from entering into the mainstream in any of the areas.

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How can we build upon past experience with project methods in general and computer-assisted project methods in particular? How can we develop the methodology to the extent that they may be considered within mainstream curriculum? One way is to conduct research that identifies its features and outcomes. Another way is to expand upon research in other disciplines where computer-assisted project based learning has been researched more extensively. Previous longitudinal studies such as Barron et al. (1998) and Edelson et al. (1999) in the sciences and the extensive survey of project based learning written by Blumenfeld et al. (1991) (Educational Psychology) provide a strong framework for analysis of computer-assisted project based learning. These researchers identify a number of instructional features which have been shown to assist in the effective application of computer-assisted project based learning. Nine key instructional features mentioned are:

1) the organization of learning around real world problems,
2) student centered instruction,
3) collaboration,
4) teacher as facilitator,
5) an emphasis on authenticity,
6) formative assessment,
7) reflection,
8) the production of authentic artifacts,
9) and the use of computers to support learning and instruction.

How do these nine instructional features work in project based CALL? How do second language learners respond to various instructional components in computer-assisted project based learning? These are questions that need to be further researched.

There are over a dozen teacher reports of different computer-assisted project based learning applications between 1980 and 2002 (Barson et al., 1997; Bicknell, 1999; Debski, 2000a, & 2000b; Gaer, 1998; Hermann, 1992; Kubota 1999; Lee, I., 2002; Lee, L., 1997, 1998; Pertusa-Seva, 2000; Vick et al. 2000; Warschauer & Cook, 1999; Zhao, 1996). However, only a few empirical studies have been published. Overall, a variety of interesting projects have been employed in CALL from creating online newspapers (Zhao, 1996) and virtual towns (Vick et al., 2000) to meeting with native speakers to research the target culture (Lee, 1997 & 1998) and engaging in service learning (Warschauer & Cook, 1999). With all the variation, however, few of the project applications in CALL include the organization of learning around real world problems. Most of the applications entail student centered instruction, where learners have choice of projects and their interests and needs drive instruction to some extent. The majority of the applications describe the use and production of authentic artifacts such as web pages and online magazines. Many also entail collaboration among students and the use of authentic audiences.

Nevertheless, few reports and even fewer studies of project methods in CALL have utilized and discussed the constructivist-based features of teacher as facilitator, formative assessment, and reflection. Moreover, only a handful of reports describe projects with an audience beyond the classroom. The one long-term study in CALL, (Debski, 2000a, 2000b), describes the implementation of "Project-oriented CALL" in seven different language programs (including ESL). However, there is little to no mention of real world problems, the teacher role, formative assessment, and reflection, and minimal discussion of the learner's linguistic experience. Instead, the study focuses

on the impact of the methodology upon the curriculum at the University of Melbourne.

Overall the status of project based methods in CALL leaves us with many questions.

> How are second language learners responding to the various applications of project methods in CALL?

> What elements of which application are working for which areas of CALL?

> What support structures do we need to provide for second language learners as we send them out into electronic or virtual linguistic and cultural settings, as they create authentic electronic artifacts, or present to authentic audiences?

These questions need to be investigated in a variety of CALL contexts. Further empirical research is needed and further applications which specifically outline their instructional components are required for the analysis and development of computer-assisted project based methodologies.

SUMMARY OF PROJECT BASED LEARNING LITERATURE

As I explain in the literature review of this section, most applications of "Project Work" in SLA have a more narrow focus (practicing reading, writing, listening, and speaking) than those of project based learning in the sciences and other disciplines outside SLA. In addition, most of the studies and early reports of "Project Work" in SLA lack or simply fail to discuss essential components of project based methodologies such as the organization of learning around meaningful or authentic problems and the use of formative assessment and reflection. More recent discussions of project based learning in SLA literature mention these instructional features and describe broader goals for the methodology, but there are few empirical studies of PBL in the field. On the one hand, second language educators can gain important insights from research on project based learning outside of SLA. Research in a variety of disciplines indicates that other goals such as the promotion of strategic behavior, development of higher order thinking skills and content knowledge, increased learner motivation and metacognitive awareness may be achieved with project based learning. Extensive longitudinal research also shows the crucial role in PBL of instructional features like formative assessment, reflection, and the organization of projects around authentic problems.

Other the other hand, SLA is a unique discipline. We need conduct to further investigations of project based learning within second language learning contexts. Despite the many promising teacher reports on project work and optimistic discussions of project based learning in SLA, little systematic study has actually been done. Moreover, the few empirical studies of project based learning in SLA are focused on teacher and

student evaluations of the approach and instructional variations of the method (Beckett, 1999; Eyring, 1989; Turnbull, 1999). Thus, the field has little information about learner experiences and linguistic development that occurs with the approach. Most importantly, computer-assisted project based learning seldom been researched in any formal way in the area of adult ESL and rarely if ever investigated with novice and beginning level language learners.

Chapter 3: Method

INTRODUCTION TO METHOD

In the following chapter, the research design, data collection methods, and data analysis procedures will be discussed. To start, I describe the research goals and the orientation that guided my approach. Then, I present an outline of the research setting and a detailed account of the data collection. Lastly, case study methodology will be described as the method for data analysis in this study.

RESEARCH QUESTIONS AND PURPOSE OF STUDY

The purpose of this study was to investigate the learner experience and linguistic development with a computer-assisted version of project based learning in two English as a second language classes. The study also examined the instructional features of formative assessment and reflection in the PBL methodology and the various challenges the approach may pose within a second language context. The research questions were:

1. What are the learning experiences of adult ESL students in the two computer-assisted project based learning classes?

2. What are the linguistic experiences of adult ESL students in the two computer-assisted project based learning classes?

3. What linguistic gains are afforded by computer-assisted project based learning?

4. What instructional challenges do the two ESL teachers experience with the computer-assisted project based learning approach?

5. What are the teacher and student responses to the instructional features of formative assessment and reflection in the two computer-assisted project based learning classes?

The first research question is inclusive of any skills and strategies the learners used and developed as well as of any affective outcomes in the study. I looked at salient participant emotions or feelings. I sought, in particular, to investigate possible general learning strategies, computer and electronic literacy skills, and higher order thinking skills. The question is phrased broadly in order to remain open to other emergent learning themes.

The second and third research questions deal specifically with language. The second question focuses on students' second language and second language strategy use. My goal was to investigate the linguistic experience in depth, capturing the nature, quantity, or lack of first and second language use, as well as any themes that might emerge in relation to the language learning process. I looked at the use of the English language with the four skill areas: speaking, listening, reading, and writing. I also looked at emergent themes such as vocabulary development. I did not focus on the specific area of culture. It is my belief that culture is intertwined with linguistic study, and it was beyond the scope of this study to investigate culture as a separate entity. On the other hand, the second research question encompasses the area of second language strategy learning. I aimed to examine known second language strategies discussed by Oxford (1990). I also tried to find additional second language strategies outside pre-existing categories in SLA literature. The third research question concentrates in the same linguistic areas as the second research question. The difference is that the third research question focuses only on those areas for which development was demonstrated and reported across instruments.

The fourth and fifth research questions concentrate on instructional aspects of the project based learning methodology applied in the study. The fourth question is a response to previous reports in SLA (Beckett, 1999; Eyring, 1989) about possible second language specific challenges with the approach. I aimed to examine any challenges or difficulties the teachers had with the computer-assisted project based learning approach in the study. My goal was to be able to compare the results of this examination with those of previous studies in and outside SLA in order to see what kind of challenges might be second language specific. The last question, number five, focuses on the instructional features of formative assessment and reflection in the project based learning approach. I looked at verbal and written student and teacher response and commentary before, during, and after the implementation of these instructional features.

QUALITATIVE APPROACH

Overall, the research objectives in this study were best addressed by a qualitative approach. Because of the exploratory nature of the study, an open and comprehensive research approach was needed. Qualitative research seeks knowledge and understanding through a design that allows for emergent questions and issues. This design permits the researcher to study specific issues in depth without being limited by pre-determined categories (Patton, 1990, p.13 - 14).

The qualitative approach is based upon the Interpretive/Constructivist paradigm, which entails specific beliefs about the nature of reality and of knowledge. The ontological belief is that reality is "socially constructed" and multiple interpretations and characterizations can be recognized (Mertens, 1988, p. 8). The epistemological belief is

that knowledge is "socio-culturally situated" (Mertens, 1988, p.8); it is influenced by social, cultural, political, and historical factors. These concepts have influenced all aspects of this study including the decision to employ a qualitative approach.

The opportunity to study issues in depth, openness, flexibility and possibilities for human insight, and hypothesis generation are all benefits of qualitative research. However, as with any method, there are also inherent weaknesses of the approach. First, the researcher is the instrument, and; as a human being, he or she is susceptible to changes in performance, knowledge, and perception, which are all influenced by physical and emotional conditions, training, skills, and experience (Mertens, 1988, p.175). Second, the emphasis on rich data collection in qualitative research decreases the ability of the researcher to make generalizations based on results from the sample population (Mertens, 1988, p. 5, Patton 1990, p.14). Third, qualitative data are often difficult to present concisely because the products of the research are seen as closely connected with the study context (Patton, 1990, p. 13-14).

Notwithstanding, there are a variety of ways of monitoring and minimizing researcher biases and strengthening the overall research. For one, researcher values, assumptions, and biases must be clearly explained at the start of the research process and carefully surveyed and logged during the research process (Mertens, 1988, p.175). In this study, the researcher addressed such issues through regular reflections and journaling. Qualitative researchers also apply measures to enhance the credibility, transferability, confirmability, and dependability of research. In addition, there are several means of checking the authenticity and integrity of analysis (Mertens, 1988, Patton, 1990). The

researcher applied a number of these measures during data collection as described below and addressed others in the discussion and analysis of the data.

Measures to Strengthen the Research

Credibility measures check the relationship between the researcher's depiction of participant perspectives and participant perceptions of them. Five credibility measures were applied in this study. One measure was *progressive subjectivity*, when the researcher monitors his or her own developing constructions and records changes throughout the study. In this study, I monitored my perceptions and working hypotheses during regular journaling and reflection. Since as the researcher I am the primary instrument in this qualitative study, it is important to know my values, assumptions, and biases. I present this information in the Data Analysis section of this dissertation.

A second credibility measure was *persistent observation*, where the researcher has sufficient time to observe salient issues. Over the three months of the study, I observed classes weekly and bi-weekly on regularly scheduled days. In order to fully understand the study context, I engaged in an intensive nine hour schedule.

12 noon	informal meetings with program staff
1 - 3pm	observation of intermediate class
3 - 4pm	informal meeting with intermediate teacher, observation of lab
4 – 6pm	reflection, journaling, and informal meetings with program staff
6 – 8pm	observation of beginning class
8 – 9pm	Informal meetings with beginning teacher and students

This schedule provided ample time to observe important issues in the class and program as a whole.

A third credibility measure applied was *member checks* in which constructions formed during data collection and analysis are checked with participants. I conducted member checks with the two teacher participants and one staff participant in this study and have described the process in the Data Analysis section of this dissertation. The technique of *peer debriefing*, the sharing and discussion of findings, analyses, hypotheses, and conclusions with a disinterested peer was applied as well (Mertens, 1998, p.180 – 183.). I conducted multiple electronic peer debriefing sessions with my dissertation chair.

In addition, T*riangulation* was employed in the data analysis stage. More specifically, there was a triangulation of sources. Triangulation of sources is when a researcher compares and cross-checks information derived from different instruments, people, or time periods within a qualitative method. In this dissertation, I repeatedly compared and cross-checked data in questionnaires, interviews, field notes, formative assessments, student work, course evaluations, and reflections. For example, the development of an ability to summarize ideas in English was reported in one teacher interview. This development was also observed and noted in field notes. The researcher checked to see if similar or conflicting data emerged in student interviews, through an analysis of student work, or in formative assessment and reflection results. The purpose of this triangulation was to increase understanding of any patterns or differences that occurred across sources (Patton, 1990)

Transferability refers to the extent to which one can generalize the results from a study to other contexts. In qualitative studies, the reader has the responsibility for deciding how similar the research situation is to others. Nevertheless, the researcher can

enable the reader in that role by providing thick description. Thick description is a means of providing the reader with sufficient detail to make the judgment of transferability (Mertens, 1988, p. 183). Thick description generally includes details, contextual information, descriptions of emotion and social relationships, or other information that will allow the reader to better understand the situation and thoughts of the people represented in the study (Patton, 1990, 431- 430). In this study, I present details on the physical setting, educational context, and study circumstances. I describe participant backgrounds, community, and social relationships. I also describe participant words, emotions, and actions. In addition, I utilize a number of quotations in order to better represent the voice of participants. The purpose of this thick description is to allow readers to judge the transferability of different aspects of the research to other second language and computer-assisted language learning classrooms.

Confirmability is the notion that the data and interpretations are well founded and logically determined, e.g. they are not imaginary fabrications. To achieve confirmability, the researcher explicates the origins of data and the logic used for interpretations (Mertens, 1988, p.184). Confirmability is addressed in several ways in this study. First, in the Data Collection section of this dissertation, I provide a detailed explanation of how data was acquired. Next, in the Data Analysis Procedures section, I discuss processes used to interpret data and confirm hypotheses. These processes are also made clear in the presentation of Results. In the Results section of this dissertation, I present data in a way that it can be traced to the sources. I also explain the logic used for data analysis.

Dependability, which is analogous to reliability in a postpositivist paradigm, signifies "stability over time" (Mertens, 1998, p.184; Lincoln and Guba, 1989). However, in an Interpretive/Constructivist paradigm, variations in research are anticipated and must be closely followed and openly examined in order for the research to be dependable. In this study, I carefully documented information pertaining to the research protocol, instruments, interviewer, and interviewee circumstances. In the Results section, I disclose changes that occurred during the research such as the modification of project themes, class interruptions, and alterations in class assessments and forms.

Authenticity refers to the fair display of different viewpoints, values, and beliefs. Some of the means of achieving authenticity include explaining how information about participant constructions was acquired, presenting any conflicts or value discrepancies, discussing the extent to which participants became more informed, and explaining actions that were prompted by the research process (Mertens, 1988, p.184 - 185). In this study, all of the above measures were considered during data collection and applied in the presentation and analysis of data. In the presentation of data, I explain how student and teacher constructions were acquired and discuss conflicts and value differences. I describe instances in which participants were informed by the research. I have also indicated when activities were prompted by the research process. In addition, my approach to the analysis and interpretation of the data was non-hierarchical. I did not use teacher or researcher hypotheses to drive my interpretation of the data. Instead, I gave equal weight to student, teacher, and researcher ascertains by looking for ways in which each of these were or were not demonstrated or confirmed in the data. I also sought verification and negation of hypotheses regardless of who generated them.

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Integrity measures check, among other things, the honesty of analysis. One way to achieve integrity in analysis is to test rival explanations. After conducting an inductive analysis in which patterns and potential explanation are found, the researcher looks for competing themes and explanations (Patton, 1990, p. 462 – 463). In this study, I searched for rival explanations in two ways: first, inductively, by looking for alternative ways to organize the data that might generate new hypotheses; and then, logically, by considering other logical possibilities and testing them on the data. One example of a hypothesis that was negated by the data was that of learner increases in confidence. Teacher reports and summary data from background questionnaires suggested that the learners had had all around increases in their confidence in their computer and English language skills. The confidence building potential of PBL has also been reported in previous research. However, when I checked for rival hypotheses, I found two cases in the study in which this was not true. Additional analysis of individual confidence ratings and student reports showed that confidence increases varied. After further investigation, I revised and refined my hypothesis to include three different confidence patterns. These patterns were confirmed by multiple data sources. Consequently, the hypotheses are presented in the results section along with an explanation of their source.

In addition to checking rival hypotheses, I contemplated situations and cases that did not fit within patterns and trends I found during the first phase of analysis. For example, I explored different as well as additional means of categorizing data I had coded and categorized during data collection. This was important because some of the initial codes and categories were more heavily influenced by my perspective and knowledge of

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previous literature. It would have been easy to impose a framework upon the data, but this would not have captured the nuances, new insights, and insider perspective of the participants. As I investigated the participant perspective and explored alternative and further means of categorizing the data, more indigenous concepts were generated and new ways of seeing and labeling the data emerged**.**

One example of an indigenous concept that afforded new insights was the category of "independence." The category was named and defined by one of the teacher participants. Initially, I had been looking for evidence of *learner autonomy,* an outcome frequently reported in previous research on project based learning. However, such individualistic qualities did not match the data in this study because a great deal of collaboration took place among students. Instead the teacher named the category of "independence" which referred to the self-sufficiency students were able to obtain by working together in groups. Thus, I changed the sensitizing category of "autonomy" to the indigenous concept of "independence." The process of checking integrity yielded changes and insights of this nature.

In summary, I addressed issues of integrity, credibility, transferability, confirmability, dependability, and authenticity through out the data collection, analysis, and presentation process in this study.

Pilot Study

A pilot study with computer-assisted project based learning was conducted prior to this study in several first year Spanish language classes at a large Southwestern

university, but the purpose, participants, setting, and research method were very different from those of this study (See Sidman-Taveau & Milner-Bolotin, 2001).

Research Setting

In order to fully understand the nature of this study it is necessary to have a clear picture of the context in which it occurred. In particular there are a number of socio-economic and cultural factors which I believe contribute to the *Social distance* and *Psychological distance* between Spanish and English speakers in the study setting. Schumann (1976) describes social distances as "the societal factors that either promote or inhibit social solidarity between two groups and thus affect the way a second language learning group acquires the language of a particular target language group" (Cited in Brown and Gonzo, 1995, p.262). He explains that psychological distance is the "proximity between the learner and the target language group that accounts for successful versus unsuccessful second language acquisition" (Cited in Brown & Gonzo,1995, 272). I believe there were a number of factors which inhibited the unity between the Spanish language speaking students in this study and English language speakers in their community. Socially, the students were isolated and lived in noticeably poorer economic circumstances than the surrounding English speaking community. Psychologically, as adult learners, the students had the shock of not being able to communicate verbally in English as they did in their native language. Moreover, many of the students were new arrivals from Mexico. They were not assimilated into the American culture. In the following discussion of the research setting, I describe some of the social circumstances.

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The study took place in the Community Based English Tutoring Project (CBET) located in the Alisal School District in the city of Salinas in Northern California. Salinas is a city of great variations. At the center it looks like a thriving and modern American city, but the Alisal district has a distinct culture, and it is characterized by cultural isolation, poverty, and crime.

Driving into the city of Salinas, the roads are framed by fields, and brown skinned people can been seen stooped over crops from early morning to late evening, in the hot sun or rain. Salinas is known as "The Salad Bowl of the World;" it produces a significant portion of the nation's produce (City of Salinas, California Official Website, 2005, Community Profile section, para.2). The central portion of the city is flanked by strip-malls with popular chains such as the Olive Garden and Home Depot. In the nearby residential areas, there are newly paved roads and large, widely spaced homes with green grass. The income level in Salinas is fairly high, but the cost of living is also high. According to the Salinas Valley Chamber of Commerce, the unemployment rate fluctuates in the city due to seasonal jobs. In the city, over half the population is Hispanic. The Salinas Valley Chamber of Commerce reports the following economic and population statistics.

The median income for a family of 4 is $55,600.

The median price for a home in Salinas is $406,000 and median rent is $1,150 for a two-bedroom, one-bath apartment.

The unemployment rate varies between 12.5 percent and 9.3 percent due to seasonal employment.

The population of Salinas is approximately 148, 400 people.

Hispanics comprise 64.1 percent of the population of Salinas. Of the remainder, approximately 45.2 percent are white, 6.2 percent Asian, and 3.3 percent African American and other races (Salinas Valley Chamber of Commerce, 2004, Population section, para. 1-4).

The Alisal District in Salinas where the study took place has a distinct culture. 83 percent of its residents are Hispanic or Latino (National Center for Educational Statistics, School District Demographics 2000 Data). A 2002 census showed 4,750 migrant students in Pre-k to 6th grade. Migrant students make up 38% of total enrollment in the Alisal district (AMBAG: 2002 Census). The situation has not changed significantly in the last three years (CBET Coordinator, October, 2005). In Alisal, Hispanic businesses and authentic Mexican restaurants abound and there are no national chains. The majority of the commercial signs are in Spanish, and Mexican customs such as greeting customers when they arrive and leave are widely practiced in local businesses. I asked an attendant at the Salinas Chamber of Commerce about the Alisal district. She said, "Oh, you mean the Hispanic area" (Anonymous Attendant, November, 4, 2003).

Additionally, there is disparity of living standards between Alisal and the city of Salinas. The Alisal Union School district is a low-income, visibly neglected area. Among its 51,896 residents, it is estimated that 9,630 families live near poverty level (National Center for Educational Statistics, School District Demographics 2000 Data). As one enters into the Alisal district, yellow cones are lined along the main road, which seems to be perpetually under construction. The side streets are full of potholes and the car of choice switches from the latest Volkswagen to the 1970's Chevy car with worn down paint and missing windows. The residential sections of Alisal are densely populated

gardenless neighborhoods with run down ranch style houses and closely packed apartment complexes.

Moreover, Alisal is not considered a safe area. From 2002 to 2004, it had the second highest incidence of crime in Salinas (254 all person crimes) and from January 2003 to 2004 it had the highest number of crimes (83 all person crimes) (Salinas Police Department Crime map, 2003). The district is known for problems with gang violence (CBET Program Coordinator, summer 2003). Two instances of gang violence including shootings occurred during the course of this study.

The CBET program provides a bridge in this community. The office is housed in the newly furnished Community Healthy Start Family Resource Center. The center offers information and access to after-school programs for youth, parent education, support groups for women and families dealing with issues such as domestic violence, addiction and chronic illness, as well as CBET computer and English classes. The center staff is friendly, caring, and bilingual. Banners hanging in front of the center read, "Clases de Inglés y Computadoras Gratis, Free English and Computer Classes." Upon entering the center, visitors are greeted and offered individual counsel. In this way, many students are referred to the CBET classes.

The Salinas CBET program is a state-funded consortium dedicated to improving adult English language literacy. One of the principal goals of the program is to help adults, who speak English as a second language, help their children in American schools. The program offers beginner, mixed, and "advanced" level courses focusing on a

combination of English and computer skills. The "advanced" level courses are courses that cater to higher-level students. The higher-level students are sometimes identified by teachers through the results of CASAS, The Comprehensive Adult Student Assessment System. However, students are free to join any English class, and they often choose their class according to the schedule and location. Students may also take advantage of free computer tutoring and two computer labs that are open during the day. Daycare is provided at all of the sites. Anyone age 18 and above is free to join. The classes are offered in neighboring elementary schools and high schools and many of the students live within walking distance.

This dissertation study took place during the summer of 2003 in two very different CBET environments: class C and class A. Class C was an intermediate level day class that met four times a week from 1 to 3 in the afternoon. The class was referred to as an advanced class within the program because it catered to higher-level students, but the language level of the student participants was intermediate. Class A was a mixed mostly beginner class that met twice a week from 5:30-8:30 at night. In addition to distinct level and time differences, the classes had dramatically different physical environments that dictated much of what the teachers could do.

Class C was housed near the center in a new computer lab dedicated to the CBET program. The newly furnished lab contained the latest model of Dell computers arranged in a circular pattern, a projector, and round tables. The teacher had plenty of space and the classroom was set up specifically for CBET students: clean white boards, a cabinet and shelves for storing supplies, and bulletin boards displaying student work and course

specific materials. During the course of the study, a technical assistant remained present in the lab at all times. In sum, it was a friendly, clean, and professional atmosphere.

In contrast, class A took place in a less professional and user-friendly environment. Class sessions were split between two rooms: one that was an elementary school classroom by day and another that housed the elementary school computer lab. The classroom did not provide much space and comfort. The room was stocked with old child-sized chairs and tables, cabinets were full of elementary school supplies, and the walls were lined with children's pictures. The blackboard was covered with notes from an elementary school class and the words "DO NOT ERASE" had been written at the top. In the computer lab, tables and old Macintosh computers were permanently lined in rows. This equipment was not entirely reliable. Just 90% of the computers functioned and the printer worked about 80% of the time. The computer mice were old and dusty, e.g. not in good working condition. Moreover, the teacher only had a technical assistant for four out of fourteen classes. To top this off, on several occasions the rooms were not available or in working condition. One night, the teacher arrived to find the whole room (chairs, tables and cabinets) stacked in a corner; it was being cleaned, but no one had informed the teacher ahead of time. In sum, it was a less predictable and difficult setting not only for the teacher, but also for the adult students.

Participants

Two teachers, one coordinator, and twenty-seven students participated in this study. The students included 19 Mexican women and 8 Mexican men, ranging in ages from 17 to 67. The majority of the students were parents with children in American

schools. 90% of the men were field workers. Of the women, 50% were homemakers, 20% were packers, and 15% were other professions (bus lady, maid, Goodwill worker, unspecified). The remaining male and female participants were unemployed. Most of the participants live within the Alisal district and the neighboring districts where the CBET classes are held. As mentioned, the residents of these areas are socially and culturally isolated from the rest of the city and English speaking community at large. Thus, the learning situation was not a traditional ESL situation in the sense that the participants had contact with English language speakers. It was borderline English as a foreign language (EFL). Participants lived within a "Hispanic community", with frequent migration between Mexico and the United States. Moreover, during the course of the study, class A became partially bilingual. Students began using English and Spanish simultaneously and class documents were translated on a regular basis. In sum, the lines between ESL and EFL were blurred and an element of bilingualism emerged during the study in class A.

In class A, the mixed mostly beginning level course, there were a total of 20 participants, eight men and twelve women. The majority of these students had stopped their formal education at the elementary and middle school levels. 39 percent of the students had only an elementary education and 33% had attended Middle School. One student had passed the GED (General Educational Development) test. The rest of the students had no formal education. They said that they had never been to school. The Coordinator explained that in some rural areas of Mexico there are no schools and no buses to nearby schools. Frequently families in this situation cannot afford to send their children to school. However, the children are often taught basic skills by older siblings or relatives.

The majority of the students attending class A had little (1 to 6 months part-time) to no English training prior to the class. Likewise, the majority of the students had little (months) to no computer training prior to the class. Several students mentioned that they had never used a computer before, and the teacher noted at the beginning of the summer that many of the students did not know how to turn one on. She ranked her students as novice to beginning level in both computers and English (Appendix D).

In class C, the advanced level group, there were a total of seven participants, all of whom were women. Only three of the women had young children. Over half of these women had completed their elementary education, three had completed high school, and one had finished Middle School. With the exception of one student, all of the students in this class had a good amount of prior study in English (1-3 years). They could communicate basic ideas and follow instructions. Furthermore, all of them had basic word processing skills and some experience with the Internet and language software programs. The teacher ranked her students at "mostly" intermediate level in English and computers.

The two teacher participants were Amanda and Catherine (aliases used). Both had extensive experience instructing children and were fairly new to the field of ESL. They knew just a few phrases in Spanish. Catherine taught class C, the "advanced" level course. Catherine had a multiple-subjects and a special education learning handicapped credential. She had taught for 20 years. She taught third and fourth grade and elementary classes for students with speech and language disorders. After 14 years, she began working towards a Cross-culture, Language, and Academic Development Certificate (CLAD), and a Teaching English as a Second Language (TESL) certificate. She then

took a leave of absence to teach in the CBET program. She also began teaching at Chartwell School, a school for children with learning disabilities and difficulty in reading. She had taught ESL for about three years. At the time of the study, she was teaching three classes, two in the CBET program and one at Chartwell.

Amanda taught class A, the mixed mostly beginning level class. Amanda had an Early Childhood Certificate, a BS in Elementary Education, and an English as a Second Language (ESL) certificate. She had taught for 13 years including two years for the Department of Defense in Germany, where she was Department Chair for one year. In addition, she was a substitute teacher for Salinas Adult School. At the time of the study, she was also teaching three introductory computer classes to ESL students.

The coordinator of the CBET program, Rose, was another a key participant. She had an M.A. in Educational Administration and Certificate in School Administration from San Jose University. She had taught bilingual elementary grades three through five and was coordinator of the Salinas Delinquency Prevention Project prior to becoming Coordinator of the Salinas CBET Consortium.

DATA COLLECTION

Introduction to Data Collection

The data collection for this study occurred over the course of 3 months from June 16, 2003 to August 20, 2003 (see Table 2 for detailed timeline). The CBET program summer session classes were held from June 23, 2003 to August 8, 2003. One week prior to the summer session, the researcher began training two teachers Catherine and Amanda, and one staff participant, Rose, in a computer-assisted version of Project Based Learning.

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At the start of the summer session, consent forms in English and Spanish and bilingual background questionnaires were administered to all student participants (Appendices A and B). Teachers were given consent forms, and they completed background questionnaires on their classes (Appendices C and D). Initial teacher interviews were conducted as well (Appendix E). Throughout the three months of classes, the researcher observed and tape recorded class sessions, corresponded regularly with teacher participants, facilitated teacher planning and instruction, took extensive field notes, and had regular informal meetings with teachers and program staff. In addition, the researcher helped administer formative assessments and reflection assignments (Appendices F-J). Program documents, teacher journals, class attendance records, course materials, samples of student work, and final student projects were also collected throughout the summer. At the end of the summer session, the researcher conducted final participant interviews and administered final questionnaires.

Table 2: Data Collection Timeline

Date	Instruments Used and Data Collected	Week(s) Administered
June 23 – August 8	PBL Training	Throughout summer
	Documentation of Attendance	First to last week
	Weekly Observation of Class Sessions	First to seventh week
	Extensive Field Notes	First to seventh week
	Responded daily to Electronic Journals/Teacher Correspondence and saved all messages	First to seventh week
	Collection of student work and teacher materials	First to seventh week
	Collection of school documents and information	First to sixth week
June 25	Consent Forms and Background Questionnaires	First week
	Teacher Questionnaires	First week
June 26	Teacher Background Interviews	First week
June 30 – August 7	Tape Recording of Class Sessions	First to seventh week
July 2	Skills Assessment Catherine's class	Second week
July 17	1st Formative Assessment/Class Evaluation Amanda's class	Fourth week
July 24	2nd Formative Assessment Amanda's class	Fifth week
July 30	Student interviews	Sixth week
July 31	Student interviews	Sixth week
	Final Student Questionnaires Amanda's class	Sixth week
	Final Reflection Assignment Catherine's class	Sixth week
August 6	Student Interviews	Seventh week
	Final Student Questionnaires	Seventh week
	Follow up Interview Questions (for students interviewed on July 30 and 31)	Seventh week
	Final Reflection Assignment Amanda's class	Seventh week
	Final products (Books and Newsletters)	Seventh week
August 7	Final Teacher Interview Catherine	Seventh week
	Final Teacher Questionnaire Catherine	Seventh week
	Final student questionnaire (one student in Catherine's class)	Seventh week
August 8	Final Teacher Interview Amanda	Seventh week
	Final Teacher Questionnaire Amanda	Seventh week
August 8 – present	Continued correspondence with teachers and coordinator*	Post study

Project Based Learning Training and Implementation

With the coordinator's assistance, I facilitated intensive hands on training throughout the summer, both before and during the duration of the classes. The training was conducted during two organized face-to-face meetings prior to the summer session and through frequent electronic mail correspondence. Regular informal meetings were also held. To begin, I provided the coordinator, Rose, with a copy of the article, "Constructivist Inspiration: A Project-Based Model for L2 Learning in Virtual Worlds" (Sidman-Taveau & Milner-Bolotin, 2001) and a "PBL Model"that includes specific steps for implementing the approach. Rose completed the steps. She picked as a topic for the lessons, "helping the students' children in American schools" and the problem of how the students could help their children with math in American schools. Then she chose an artifact that the students could produce: a book for their children. I met with her to discuss the application.

Next, Rose set up a two-hour paid training session for the teachers. I prepared an information packet for the meeting (see Appendix K for Training Packet). Rose led a social discussion in order to build team spirit. I described the comprehensive computer-assisted version of project based learning for the study (PBL). I explained its key features and summarized principal notions in constructivist learning theory. Recent findings on the PBL approach were discussed as well. The coordinator handed out her completed steps, explained her initial ideas, and encouraged the teachers to revise her plan as they saw fit. The coordinator's handout included a model I had created with a list of steps for implementing PBL. In the following document, "PBL Implementation," the steps I

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created are listed in bold Arial 12 point font and the coordinator's response is written in

New Times Roman 12 point font.

PBL Implementation P.1

- **Teacher determines a broad topic of student interest**
  Coordinator response*: Parents want to help their children with academic achievement*

- **Teacher and students narrow to one specific problem**
  Coordinator response: *Parents do not know how to help their children with math.*

- **Students and teacher Brainstorm means towards solving the problem**
  Coordinator response*: Math activities – shopping, counting, sorting; State standards; Homework; Games; Worksheets problem*

- **Students with teacher guidance develop a plan for solving problem**
  Coordinator response*: using pre-selected state math standards students will select and develop materials for meeting one selected standard at each grade level K-6th*

- **Teacher with student input defines learning objectives**
  Coordinator response:

  Be able to read, comprehend and apply state standards
  Learn specific verb list
  Develop Internet literacy
  Conduct focused Internet searches using Google Search
  Learn to read hypertext
  Learn to word process

- **Teacher pre-selects quality & relevant resources & tools of assistance**
  Coordinator response*: State Standards K-6th –CDE website; Google.Com (students will write in math lessons grade 2nd" etc..)*

PBL Implementation P.2

- **Teacher makes resources & tools accessible online**
  Coordinator response*: Students will be shown how to use the Google Search Engine and how to read and use hypertext to find lessons*

  Teacher breaks project down into manageable <u>teaching</u> steps
  Coordinator response**:** *Steps # 1-3*

  1. OVERVIEW
  Show and explain project
  Demonstrate book assembly
  Explain learning objectives
  Give out folders

  2. LANGUAGE INSTRUCTION
  Present & discuss standards list
  Teach new vocabulary for comprehension of standards
  Pair students & have select one standard per grade
  <u>Give formative assessment #1</u> (to evaluate comprehension of standards and selection process)
  Document responses in order to assess student progress and needs.
  Give students tour of Google.com

  3. TECHNOLOGY INSTRUCTION
  Teach students how to access specific lessons using Google searches
  Teach Students Internet skills: clicking on links, scrolling, printing, etc..

- **Teach basic Word Processing: typing, editing, cutting, and pasting**
  Coordinator response: *Teach students how to search and insert clip art*
  Check student understanding of material collection and the book making process

- **Teacher develops formative assessment**
  <u>Coordinator and researcher response:</u>
  <u>Formative assessment #1</u> (to evaluate comprehension of standards and selection process) Teacher asks students to discuss the following questions in pairs and goes around room to gauge progress:

PBL Implementation P. 3

Why did you select the particular standard (give students credit for thoughtful selection)?

Teacher then has whole class discuss:

> *2. What do the standards have in common? (Question to assist comprehension of standards)*

Formative assessment# 2: (Internet literacy and book process) Written assignment in pairs. Students answer questions such as:
> *1. How did you find the activities for your book?*
> *2. Why did you select the activity?*

- **Teacher develops a reflection assignment**
  Coordinator and researcher response: (advanced students can do as an essay, beginners can do this with peer interviews)
  1. *What new words did I learn? (list them)*
  2. *What do I like about my book? Why?*
  3. *What do I not like about my book? Why?*
  4. *How could I improve my book?*

- **Teacher assigns work for creation of product in manageable steps**
  Coordinator response: Steps #1-12
  1. Have pairs type each standard onto a separate page
  2. Save each page with title of grade level in a folder on computer
  3. Have groups start with Kindergarten page by choosing an activity from the resources or by developing their own activity. Activity is added (typed or pasted) to the page with the Kindergarten Standard.
  4. Groups share Kinder pages with whole class
  5. Guide groups in editing their Kinder pages (teacher led)
  6. Have groups continue with 1st through 3rd and repeat sharing/editing process (teacher led)
  7. Give formative assessment 2 (Internet literacy and book process) and document responses
  8. Have groups continue with 4th through 6th and repeat sharing/editing (student led) process
  9. Create book covers
  10. Assemble books
  11. Give reflection assignment
  12. Book show-students show books to class and other interested groups

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PBL Implementation P. 4

- **Teacher Reflection: Questions to ask yourself**
  <u>Coordinator response:</u>
    1. *To what extent did the students each achieve the learning objective?*
    2. *In what ways did the students take control over the process?*
    3. *What kinds of things did you observe which suggested that students were actively engaged?*
    4. *How did you scaffold students during different parts of the lesson or process?*
    5. *How do you know if this lesson was meaningful to the students or not?*
    6. *How would you improve this lesson?*

After the initial training session, I worked with each teacher by electronic mail, phone, and informal weekly meetings. The teachers were encouraged to keep a journal of their learning and PBL experiences, and it was agreed that this would be done by electronic mail. I also facilitated lesson ideas and scaffolded teacher learning through regular electronic correspondence. Additionally, phone meetings were held each week and the teachers met with me on class observation days. In short, it was, "a very intensive relationship" (Catherine, Personal Communication, October 24, 2003) (See Appendix L for further description of the teacher experience).

Project Based Learning Implementation

With the coordinator, the teachers chose a topic area, specific problems related to the students' lives, and a means of addressing the problems through the production of an authentic artifact. Each teacher implemented the facilitator role including the application of a variety of scaffolding methods and the pre-selection of relevant materials. In

addition, both teachers employed formative assessment and reflection assignments. Amanda's class worked in teams employing the strategy of assigning team member roles. Likewise, Catherine's students worked in pairs and groups. Because this study focuses on the learner experience, a description of the lessons will not be presented here. However, a weekly description of each class is in Appendix M.

Data Collection Instruments

Attendance

I obtained copies of the school attendance records. The student participants interviewed in the study were ones who had attended regularly throughout the summer session

Consent Forms for Student Participants

Consent forms for student participants were administered in the first week of class. The purpose of the forms was explained in Spanish and English, and Spanish translations were distributed to each student. Moreover, students were told that they had a choice to participate in the study, that information would be kept confidential, and that they could choose not to participate at anytime (Appendix A).

Background Questionnaires for Student Participants

Background questionnaires with bilingual (Spanish and English) text were administered to student participants in the first week of class. The purpose of the questionnaire was explained in Spanish and English. The goals of the background

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questionnaire were threefold. One goal was to compile student profiles: information on their gender, age, profession, education, employment, and nationality. A second goal was to obtain student self-evaluations of their English language and computer skills. A third goal was to understand student confidence levels in relation to English, the Internet, and computers. For this reason, a system similar to that of the Writing Self-Efficacy Scale (Shell, Murphy, & Bruning, 1989) was adopted. The Writing Self-Efficacy Scale asks students to rate themselves from 0 (No chance) to 100 (Completely certain) on specific writing tasks. Likewise, in this study, students were asked to rate themselves on specific English language, computer, and Internet tasks. However, it was determined that a 0 to 100 scale, usually associated with letter grades, was not appropriate for this setting. Most of the participants had not had experience with such a scale. Over 17% of the student participants had no formal education and 33% of the adults had not been to school since elementary school. Plus, all of the participants who had formal schooling did so in Mexico where the grading scale is different. The coordinator felt that the students would not be able to identify with the 0 to 100 scale. Instead a rating system of one to five was used and each number was linked to a phrase that the participants could easily understand (the original English Background questionnaire and a copy of the actual translated questionnaire appear in Appendix B).

Staff Participant Consent Forms, Questionnaires, and Interviews

The coordinator and teacher participants were given consent forms in the first week (Appendix C). Teacher questionnaires were also administered (Appendix D). The purpose of the questionnaires was to obtain teacher assessments of the students' English

and computer level and skills using the same 1 to 5 rating system employed for student questionnaires. Because this was a fairly closed rating system, interview questions were also sent to the teachers by electronic mail. The questions elicited further comments on students' English, Internet, and computer skills. The purpose of these interviews was also to learn about the teachers' educational backgrounds, their notions of teaching and learning, and their expectations about the PBL method (Appendix E).

Observations and Tape Recordings

I observed the two classes weekly; one day a week throughout the summer and two days in the first and last weeks. My role was one of "participant observer" conscious observation combined with some involvement in class sessions. The degree of participation varied from *Complete Participation*, actually modeling a lesson in the first week and taking over for 30 minutes during a teacher emergency, to *Passive participation*, sitting in back of the class watching students and taking notes. However, in the majority of the classes, I engaged in *Moderate Participation*, observing and participating in a select number of activities (Mertens, 1988, pp.317-318). The participation included assisting students individually upon their request and helping teachers problem solve. The latter was done not as a traditional trainer, but as a facilitator: listening, offering suggestions, and asking questions.

Teacher Journals and Informal Meetings

At the start of the study, teachers were asked to keep regular journals of their learning. They were also encouraged to communicate with the researcher as frequently as

they wished. It was agreed that the journals and most of the correspondence would be done electronically. Thus, the purpose of the electronic correspondence became twofold. On the one hand, it was a tool for and record of teacher learning. On the other hand, it was a means of documenting teacher reports on the PBL classes. I responded to teacher correspondence two to five times a week, and, with the teachers' consent, all messages were saved for research. At Amanda's request, in the second week, I also began holding weekly phone meetings with her. The meetings lasted 2to 2 and ½ hours each week. The other teacher, Catherine, did not wish to speak by phone; however, both teachers met informally with me in brief sessions prior to each observed class and for a more substantial amount of time following each class (from 20 minutes to 2 hours). I had weekly informal meetings with CBET program and Healthy Start Center staff as well.

Field Notes

I took field notes throughout the summer. Extensive field notes were written following informal meetings with the teachers and after each observed class session. The notes were recorded in the order in which information was witnessed, or thoughts emerged. Every other week, I color coded the notes into broad categories such as class activities, teacher actions, student actions, and student quotes. The primary purpose of the field notes was to be able to reconstruct what was done in class, the activities and teacher actions, as well as student actions, and any salient comments that were made. I also sought to capture details relating to the educational setting, namely, the classroom facilities and neighborhood. Over the summer, the majority of the classroom based notes were transferred by category into tables in Microsoft word (Appendix N). The purpose of

consolidating the notes by category was to explore emergent themes and to develop a mental checklist of items that should be noted during each session.

Student Work and Teacher Materials

I collected copies of all course materials and student work; the latter included completed work from participants in each class. I collected pieces of the project process (rough drafts, layout designs, etc) and all final projects. Additionally, I obtained copies of the student skills assessments, formative assessments, course evaluations, and final reflections. I collected these documents with two goals in mind. The first goal was to be able to track the nature and quality of student work throughout the summer. The second goal was obtain documents that would help me to reconstruct the class content. To achieve the second goal, all teacher materials (handouts, readings, or websites) were also noted or copied.

School Documents

I secured copies of articles, brochures, and grant applications describing the CBET program and lab facilities. These documents were collected in order to better understand and describe the educational setting.

Final Questionnaires

Final questionnaires were distributed in both classes. The questionnaires were the same as those given in the first week of class, but returning students were told that they did not need to complete the background questions a second time. The purpose of the final questionnaires was to obtain information that would allow for a comparison between

student reports on their English language, Internet, and computer skills at the start of the summer session and their reports on these skills at the end of the summer session.

Final Student and Teacher Interview Methodology

Standardized open-ended interviews were conducted with teacher and student participants. An open-ended structure was chosen in order to minimize the interviewer effect, and a standardized format was selected in order to facilitate data analysis. In addition, probe questions were carefully prepared to assure that specific information would be covered. Student questions, probes, and protocol were translated in advance. Interview protocols follow the next paragraph.

Final Student Interviews

I administered final student interviews in the last two weeks. This consisted of eleven 30 minute interviews conducted during class time (in order to take advantage of on site babysitting for students' children). The interviews had three main purposes: to obtain student reports on what they had learned, to get student responses to different aspects of the PBL method, and to elicit any further comments. During the interview sessions students were encouraged to respond as they felt comfortable in English or Spanish. For interviews in the beginning level class, I spoke primarily in Spanish. For interviews in the advanced class, I used a combination of English and Spanish. The interview protocol follows (Spanish translation appears in Appendix O).

Introduction

Thank you for agreeing to this interview. I want you to know that the purpose of the interview is not to judge your English language, but to gather information about the class this summer. Please feel free to respond in Spanish or English as you feel comfortable.

The information you provide will help me to describe the student experience with the Project Based Methodology and will contribute to future improvements in English as a Second Language teaching. There are no right or wrong answers to the interview questions. This is an opportunity to express your own thoughts and beliefs.

All information you provide will remain confidential and your responses will not be linked with your name in any written or verbal report. You are free to choose not to answer any questions and can stop the interview at any point without prejudice.

What kinds of English language skills did you learn in this class this summer?

> Probes

>> What kinds of English reading skills did you learn?
>> «　　　　　　　　writing　　«
>> «　　　　　　　　listening　«
>> «　　　　　　　　speaking　«

2. What kinds of computer and Internet skills did you learn in the class this summer?

> Probes

>> What word processing skills did you learn?
>> What kinds of things did you learn to do on the Internet?

3. Describe your feelings while working on the project (the book/the newsletter) this summer.

    Probes

        For example, anxious, frustrated, motivated, excited…)?
        How did those feelings change over the summer?

Final Student Interview Questions Page 2

4. Could you describe what it was like working in groups?

    Probes

        How did you work with other students?
        What did you learn working with other students?
        How did you feel working with other students? Why?

5. How has your experience in the class this summer been different from other classes?

    Probes

        What kinds of activities did you do that were different?
        How was your learning different?

6. Do you have anything else you would like to say about the class this summer?

Seven of the student participants were given the final interview questions prior to the completion of their projects (on July 30 and 31). For this reason, follow up questions were administered in a post project interview the last week. The purpose of the post

project interview was to see if students had new learning, feelings, or comments to report after finishing their projects. The post project interview protocol (in Spanish and English) follows.

August 7, 2003

Estimado_____   ,

La semana pasado usted tuvo una entrevista conmigo acerca su experiencia en la clase de verano. Hoy les pido a todas las personas que se entrevistaron conmigo que me contesten estas otras preguntas. Usted no está requerido/a a contestar estas preguntas y otros comentarios que usted desea proporcionar están aceptados (y bienvenidos). Por favor regrese este papel hoy, antes de salir de de la clase.

1. *Ahora que usted ha terminado la clase y a completado su proyecto (el libro) ¿Tiene algún otro comentario acerca de su experiencia en aprendizaje en esta clase?*/Now that you have finished the class and completed your project (publishing the newsletter/putting together your book), do you have any other comments about your learning experience in this class?

2. *¿Qué ha aprendido en clase desde la semana pasado?*
   What have you learned in this class since last week?

3. *¿Qué nuevos sentimientos ha tenido en esta clase desde la semana pasada?*
   What new feelings have you had in the class since last week?

Final Teacher Interviews

        A 1 hour and 15 minute interview was conducted with Catherine following her last class session and a 1 hour and 30 minute interview was conducted with Amanda the next day. The purpose of these interviews was to obtain teacher reports on student learning and to gain insight into the teaching process with PBL. All questions were phrased in an open manner in order to allow for more natural participant directed conversation; however, I used an interview checklist with potential probes to assure that specific details were covered. Both interviews were carefully recorded and I took notes following each session. The interview protocol (including the researcher's checklist) was as follows.

Final Interview Questions for Teachers, Page 1

Thank you for taking the time to do this interview. The purpose of this interview is to learn about your experience implementing PBL and to get your assessment of student learning and attitudes this summer. The purpose is not to evaluate your teaching in any way. All information you provide will remain confidential and your responses will not be linked with your name in any written or verbal report. You are free to choose not to answer any questions and can stop the interview at any point without prejudice.

1. How did you implement PBL in your class this summer?

General rundown	
Key elements of PBL in class	
Typical week	
Differences from previous classes	
Differences in assessment	
Differences in prep time	

2. What was it like for you to implement PBL in your class?

Work entailed	
Feelings working with PBL	
Limitations in facilities	
Computers	

3. How would you describe your students' current English language abilities in the class? Which language related skills did they learn this summer? How do you believe they gained these new language skills?

PART 1	
Reading, writing, speaking, listening,	
Learning strategies	
English language tasks they can complete	
PART 2	
Activities leading to learning of skills	
Teacher help towards learning skills	
Aspects of PBL that enable learning	
Skills may not have learned w/o PBL	

Final Interview Questions for Teachers, Page 2

4. How would you describe your students' current computer skills in the class? Which computer related skills did they learn this summer? How do you believe they gained these new computer skills?

Internet skills	
Skills with a mouse	
Tool bar functions	
Tasks they can complete	
Feelings/attitudes about the computer	

5. How did your students respond to the PBL methodology?

Attitude or emotions they expressed	
Changes you saw in student attitudes	
What comments and behaviors observed	
How much spoke Spanish & English during PBL	

6. What other information do you feel is important to add?

In conclusion, the data collection process and training were thorough and intensive. Consequently, a wealth of data was gathered on the study participants in the two computer-assisted project based learning classes. To understand more fully how PBL was implemented, please see "Weekly Description of Classes" (Appendix M), which gives a weekly account of the two classes.

Introduction to Data Analysis

In the following section, I discuss the data analysis procedures including the selection of the two central and four embedded cases, and the data analysis steps. Next I provide an explanation of researcher biases. Measures used to strengthen the research are discussed in the section "Qualitative Approach" in the beginning of chapter 3.

Selection of Cases

Prior to data collection, I selected two ESL classes as the central cases for the study. The classes were one mixed mostly beginning level class, referred to as Amanda's class, and one intermediate level class, referred to as Catherine's class. The coordinator selected Amanda and Catherine as participants because they were "star" teachers in the program (Coordinator, May, 2003) who were interested in professional development and willing to try the project based learning method. I chose the mostly beginner and intermediate classes because they were the most similar. Other classes focused on computer skills alone. After data were collected in the two selected classes, I chose four case study participants, two in Amanda's class and two in Catherine's' class. Embedded case studies were conducted of each of these four participants. The four participants were selected on the basis of two criteria. One criterion was the availability of data. The four students chosen were among those who had attended the classes regularly and from the start of the summer session to the finish. They were participants with whom I was able to conduct

interviews and for whom I was able to collect student work. The other criterion was the representative nature of the participants. I chose participants who were representative of two extremes in the study. One extreme was the lower level English speakers who had no formal education and few computer skills. This extreme is represented by Lupe in Amanda's class and Miriam in Catherine's class. The other extreme was the higher level English speakers who had a high school education, a plan to attend college, and prior experience with computers. Fernando in Amanda's class and Lillia in Catherine's class represented this extreme. The choice of focus participants is also reflective of the age ranges and gender ratio in the two classes.

Data Analysis Procedures

This qualitative study was exploratory in nature. Unlike quantitative research the hypotheses were not pre-determined, but emerged during the data collection and analysis process (Lincoln and Guba, 1985). The following paragraph describes process I used for data analysis and interpretation.

After data collection, I transcribed interviews and class transcripts with the assistance of three native Spanish speakers. I read and sorted all of the raw data and did the initial coding of the data by hand. Next, I checked my understanding of the transcripts with my native Spanish speaking assistants. At the same time, I began creating a case record, a comprehensive resource packet with relevant information on the two classes and four embedded cases. As I input the case record into my word processor, I reread and contemplated initial coding labels. I looked for reoccurring patterns and for indigenous concepts, ones that were named by the participants. During the process, I eliminated

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categories that did not hold together or that overlapped with other categories. I also added

new labels. The initial codes were gradually prioritized, relabeled, and sorted into about

40 sub-categories. I cut and pasted data from a variety of sources into individual

documents organized by these categories. For example the category of "writing" in

Catherine's class was represented in one document with data from teacher and student

interviews, formative assessments and reflections, field notes, and student projects.

Hypotheses emerged during all levels of this data analysis process. I recorded them as I

worked and placed them next to related categories for further analysis and testing.

Once the categories were more or less defined and data had been loaded into each

of the representative documents, I organized the documents and related hypotheses

around the five research question topics: learning experience, linguistic experience,

linguistic gains, instructional challenges, and formative assessment and reflection. Then, I

put the case records into a topical narrative and began comparing the two classroom case

studies. After my peer debriefer evaluated and checked the logic of my working

categories and hypotheses, I further analyzed and interpreted the data. I discussed my

working hypotheses with the one of my participants, the coordinator of the program, and

made revisions and additions. At the same time, I sent my working analysis and

hypotheses to the two teacher participants for member checks. Both of the teachers

confirmed interpretations and factual information and provided additional insights. The

coordinator checked my interpretations of Spanish language quotes and provided

additional factual information. After the member checks, I re-evaluated parts of the data

analysis the staff participants had responded to and made necessary corrections. Overall, the data analysis process was inductive, non-linear, and recursive.

Researcher Biases

I am white, female, and in my mid-thirties at the time of the study. I grew up and reside today in Northern California. My profession at the time of the study was Adjunct ESL professor at a community college. I speak Spanish at the advanced level with fluency but not with complete accuracy. My comprehension of the Spanish language is high, although I had little experience with rural Mexican Spanish prior to this study.

Language Teaching Experience

At the time of the study, my language teaching experience was fairly broad in terms of the skills and levels taught, but most of the students I had worked with were from higher socio economic backgrounds. I began my teaching career as a tutor of English as a foreign language (EFL) in Portugal in 1987 and then in France in 1989. Over the next fourteen years, I tutored and taught ESL students the United States. I worked with novice to near native English speakers of over 40 different nationalities and taught all four skills. The majority of my students were highly literate international business people, college and graduate students. I started teaching ESL in the classroom in 1994. For the first six years, I taught in private language institutions for college bound international students. Later I taught three semesters of Spanish at the university level. Then, in 2003, I began teaching advanced ESL at a community college where the student population was more socio economically diverse. These experiences opened me to some

of the differences among ESL and EFL student populations; in particular, the great rifts between students in regard to their academic skills, knowledge of learning strategies, and the prevalence of challenging life problems.

Language Background

My successful second language learning experience has been primarily experiential. I learned to speak French, Spanish, and Portuguese through social and work contexts as well as through minimal academic study. In Portuguese, I had almost no formal academic study but became fluent after complete immersion in the Portuguese language and culture during a high school year abroad. Although I am no longer fluent, I was near native for a good period of time. In contrast, I studied French in high school and college, but did not become fluent until a year abroad in France and eventually marrying into a French speaking family and social network.

Spanish Language Experience

My prior knowledge of Portuguese and French account for some of my errors in Spanish as well as for my relatively quick acquisition of the language. I have practiced Spanish informally and regularly with friends, colleagues, and acquaintances for the last eighteen years, but my formal Spanish study only consists of two semesters. In 1987, I took one semester of Spanish in college. In 1995, I spent a semester studying Spanish in Mérida, Venezuela. I lived with a Venezuelan family and made a point of speaking Spanish at least ninety percent of the time. Afterwards, I continued to practice with Spanish speakers of a variety of different dialects while I worked in the department of

Spanish and Portuguese in a large southwestern university. I also taught beginning

Spanish for three semesters. The results of my linguistic experiences that pertain to this

study are as follows.

Communication with participants

For the most part, it felt easy and natural to communicate with the Spanish

speaking participants in the study (see Research Method for details on my role as

participant observer). Linguistic challenges were opportunities for language exchange

and for modeling language learning strategies. For example, at the beginning of the

semester, I sometimes did not know the computer terms in Spanish. On these occasions, I

would use English along with gestures and demonstration to communicate. Then I would

ask students to teach me the terms in Spanish. This allowed for reciprocal language

exchange even with novice English speakers. At other times, the teacher participants

would ask me to do on the spot translation. The processing demands of being a

participant observer, switching between English and Spanish, and adjusting to an

unfamiliar dialect were sometimes challenging. In these instances, I let the students hear

my stumbling in Spanish and took the opportunity to model language learning strategies.

I had been introduced as "Profesora Taveau" [Professor Taveau] and the students were

told that I was working on the "highest academic degree" (the Ph.D.). Mistakes helped

humble my image and provided opportunities for modeling. They did not seem to stifle

communication or my ability to connect with the students.

Empathy and Cultural Understanding

Overall, I have a high empathy for the student participants in the study. As someone who studied three different foreign languages informally and lived abroad, I have a strong empathy for the participants as second language students and as students in an experiential learning situation. On the other hand, I had little experience to know what it is like for some of the student participants to learn a second language without being literate in the first.

My understanding of the culture of the student participants is informed by my education and upbringing. With a Masters in Latin American studies, I had the opportunity to study the culture, history, and politics of Mexico. This background knowledge assists my understanding and appreciation for the culture the student participants. In addition, I grew up and reside in California where I have had the opportunity since childhood to interact with and get to know distinct individuals from different Mexican and Mexican American communities. The study was my first time to work (in the teaching or research capacity) with members of the Mexican migrant community in the U.S., but the culture was not foreign to me.

Biases

As part of the qualitative research process, I have taken several measures to reduce the effects of my biases. The first step which began prior to the study was to reflect upon my biases. I have continued this reflection through journaling during the data collection and data analysis process. The major biases I see are pedagogical and philosophical.

Because of my second language learning experiences, I have a personal preference for experiential language learning pedagogies such as Project Based Learning (PBL). As can be inferred from the above descriptions (Language Background and Spanish Language Experience), most of my language learning occurred with hands on experiences as I was living abroad and functioning in the foreign language. In this context, I found language learning exhilarating and continued to hone my language skills through authentic interactions at home and abroad. My academic experiences, which were more traditional in their focus on discrete points, were less pleasurable and less memorable. However, they provided me with an essential understanding of grammar and helped me to develop language learning strategies that bolstered my hands on study. Overall, these experiences along with my philosophical bent incline me to be at least cautiously optimistic about the constructivist-based version of PBL investigated in this study.

My beliefs about learning are informed by constructivist and socio-constructivist epistemology. I believe that learning is an active process of knowledge construction. Learners need to make meaningful connections and to confront any discrepancies in order for deep learning to occur. I also believe learning occurs in the sociocultural realm, where it is mediated by individuals and materials carrying social, cultural, and contextual information (Fostnot, 1998; Reagan, 1999). In addition, I believe that the success of a learner depends upon an interaction of learner traits; in particular, the type and level of motivation or anxiety (Ellis, 1994); and social factors such as the learning environment, cultural attitudes, and relationships among the learner, teacher, and peers (Schumann, 1976; Wentzel, 1999).

To minimize the effects of these biases, I took the following steps. I read extensively about the challenges other teachers and researchers have experienced with PBL (see Literature Review). Prior to this study, I also engaged in hands on action research with PBL. I created a series of web-based PBL lessons for a number of first year university Spanish language classes and observed the implementation over the course of two years. During this time, I continually evaluated the method (and my application of it) by eliciting written and oral feedback from students and teachers using the lessons. As I processed the feedback, I paid special attention to the difficulties students and teachers experienced. Overall, this action research gave me first hand knowledge of some of the possible shortcomings of PBL and difficulties of implementing it within a specific context (Sidman-Taveau & Milner-Bolotin, 2001). Using what I know from this hands-on experience and previous literature on PBL, I continue to question my assumptions about PBL, to critically analyze different aspects of the method, and to question any overly optimistic interpretations of the approach.

Chapter 4: Results

CASE STUDY PARTICIPANT PROFILES

This study focuses on two computer-assisted project based learning (PBL) classes. One class is a mixed, mostly beginner, class referred to as "Amanda's beginning class." The other class is an intermediate class referred to as "Catherine's class." Within each class, there are two embedded cases studies, or focus participants. The focus participants in Amanda's beginning class are Lupe and Fernando. The focus participants in Catherine's intermediate class are Lillia and Miriam. The following section contains brief profiles of each of these participants. Aliases are used for all participants.

I discuss the two focus participants in Amanda's beginning class first. Lupe in Amanda's class was a woman, 67 at the time of the study, and grandmother of six children. Lupe had no formal education. She had difficulty reading and writing in Spanish, her native language. When Lupe started the CBET program in 1999, she was a novice English speaker and lacked basic literacy skills in her native language. She told the coordinator that she did not know if they wanted her in the program because she was "tan burra" [dumb as a mule]. She said she did not know how to read or write or use the computers (Coordinator, Personal communication, July 23). In her first semester, she started with the English language alphabet. By the summer of 2003, Lupe was an advanced beginner in English and a beginner on computers. Lupe had used a computer only minimally to work on an English language learning program called "Rosetta Stone." However, Lupe was motivated to learn. She said she had to learn English for her children. Lupe was the primary caretaker of six grandchildren and became the guardian of two of

these grandchildren after her daughter was killed in a car accident in the winter of 2003. The children she had custody of were young. One was in Kindergarten and the other was just starting first grade. When the teachers in the program heard about the plight of Lupe's family, they took up a collection and bought toys for the children and coats for the family. During the summer of 2003, Lupe came to class every night wearing a big smile and two coats: one of the coats the teachers had given to her and another she said she did not want anyone to take. The teachers and coordinator suspected that there were underlying emotional issues behind Lupe's layers of clothing. Lupe wore the coats every night through 85 to 99 degree temperatures and up until the very last day when Amanda coaxed her to take one of them off. After the summer of 2003, Lupe took two more semesters of English in the CBET program. Then she began studying in English for high school equivalency, the General Education Development (G.E.D.) credential.

Fernando, a man, who was 32 at the time of the study, was a field worker on disability and father of two children ages six and four at the time of the study. After the study began, Fernando started working a late night shift in a cannery. Fernando had an elementary school education. He had been studying in the CBET program for at least two years. By the time of the study, he had moved to intermediate level in English and to an advanced beginner on the computer. Fernando was an extrovert in personality. Eyes blood shot from sleep deprivation, Fernando attended class each night, participating and helping others enthusiastically. After the 2003 summer session, Fernando studied for his GED credential. He passed the GED and started college in the fall of 2005.

The two focus case study participants in Catherine's Intermediate class are Lillia and Miriam. Lillia, a woman, who was 30 at the time of the study, was a packer (of fruit),

and part time ESL student at the local community college. Lillia had an elementary school education. She had been studying English and computers in the CBET program a little over two years. Lillia was from a tight knit conservative Mexican family. Catherine described her as sophisticated and socially and politically aware. At the end of the summer session, Lillia started dating the American lab assistant who only spoke English. It was unusual to see this mingling between a Mexican woman and American man; the news was relished by program staff. After the session, Lillia quit her job as a packer and started working in housekeeping at an upscale resort in a nearby tourist area. She passed her GED credential and continued attending college.

Miriam, a woman, who was 37 at the time of the study, was a former fieldworker, a home maker, and mother of three children one age five and two age ten at the time of the study. Miriam had no formal education. However, she had been studying English and computers in the CBET program with Catherine and another teacher for one year. Miriam was shy and soft spoken. She participated in class very little at the beginning of the semester. After the summer session of 2003, Miriam continued studying in the two classes. Today her teachers describe her as funny and talkative. She interacts frequently with others during class. She is also manager of her apartment complex.

It should be noted that these focus participants and the participants in general in this study are remarkable people. The students attended class despite extremely difficult life circumstances. Students and teachers carried on even in the face of gang shootings at the neighboring site. The beginning students and teacher tolerated challenging classroom situations from no air conditioning in the heat of the summer to dysfunctional computers.

Overall, the participants were a group of motivated and hard working people who deserve recognition even beyond what was achieved within the methodology.

LEARNING EXPERIENCE

This section focuses on the learning experience of the adult ESL students in the two computer-assisted PBL classes. The first part discusses affective outcomes relating to confidence, attitude, engagement, motivation, independence, and pride and ownership. The second part describes skill development and learning experiences in the areas of teamwork, higher order thinking, content knowledge, and computer skills. The contents of this section are all part of the planned research focus, but before they can be fully understood, it is necessary to review an emergent theme in the study: the challenging circumstances in Amanda's Beginning Class. The difficult circumstances in Amanda's class were very much a part of the learning experience. The circumstances also affected the ways in which research instruments were responded to and interpreted in the study. Therefore, I describe these circumstances below before beginning the section topics.

Challenging Circumstances: Houston! We have a Problem!

Amanda's class situation was so riddled with problems she likened it to the movie Apollo 13 when there was a problem with the ship mechanism. The famous line, "Houston! We have a problem!" became her "mantra" for a while during the study (Amanda, CATESOL Presentation, Spring, 2004). Amanda had challenging classroom circumstances and the students themselves had "traumatic" life circumstances (Coordinator, Member Check, October, 2005). The class was in many ways a "worst case

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scenario" for the implementation of PBL (Coordinator, June 23, 2003). The coordinator said the most exciting thing about this study was that she felt we were "Bringing the best to the neediest, like giving water to people in the desert." The desert was not only the difficult circumstances the students were living in but also the wanting classroom situation. Amanda's class was initially plagued by five major challenges: resistance from students, mixed and limited student skills and experience, an extremely transient class, an unpredictable classroom environment, and "every interruption known to man" (Amanda, CATESOL Presentation, spring, 2004).

Before the study began, students were resistant to non-traditional instruction. Amanda said, "I had rejection to non-traditional teaching before" (Field Notes p.11 on Personal communication, July 11). Amanda had been doing some non-traditional warm up exercises. In one exercise, students clapped out English phrases in order to get a feel for the sound of the English language. She also had an activity with "beanie babies." Students suggested personal questions to ask one another and Amanda wrote them out in English. Student would throw beanie babies to one another and ask the questions. Whoever caught the beanie baby had to answer the question. Apparently, students reacted negatively to these exercises. "And they wouldn't let me continue. They vetoed it," Amanda said (Final Interview, p.5). Consequently, Amanda put them into groups by level and had them work with a "Blue Book" containing English grammar, spelling, and pronunciation exercises**.** Students did not like working in groups without the teacher. Amanda said, "I put them into the group for the book because they just wouldn't do games. They practically were ready to tar and feather me and put me in the pot," (p.5).

Amanda also had some difficulties because of the mixed levels and backgrounds

of her students. Although most of Amanda's students were beginners in English, quite a few were novice and several seemed to be intermediate or higher. On the computer, students were a combination of beginner and novice. One student noted, *"algunos sabíamos y otros no sabíamos. Unos le hablaban y otros [no] le hablaban"* [Some knew and others did not know. Some spoke to her and others did [not] speak to her] (Bertha, Final Interview, p.4). In addition, the students had limited educational backgrounds. Most had stopped their education at elementary school and a number had no formal education. A lack of experience in school was something students mentioned frequently as they discussed their problems and abilities. One student summarized the dilemma well.

> *En Mexico yo no fui a la escuela lo que yo aprendí fue por medio de personas y amigos. No entiendo muy bien la lectura en español menos en* inglés *(Final Interview, Antonio)*

> [In Mexico I did not go to school what I learned was through people and friends. I don't understand text in Spanish and less in English (Antonio, Final Interview)]

Lupe said that because she had not been to school, she did not know many letters in the alphabet.

> *Lupe: Yo nunca he ido a la escuela, y muchas letras no las conzoco. (Lupe, Class Trancript, July 3)*

> [Lupe: I have never been to school, and I don't know many letters. (Class Trancript, July 3)]

These students struggled with literacy in their own language and had little prior exposure to academic culture. Not only did Amanda have the challenge of working with students who had limited experience in the areas she was teaching, but she also had the challenge of dealing with mixed levels in each area.

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Nonetheless, one of the greatest challenges was the transient nature of the class.

During our planning and training period, Catherine wrote:

> One thing that we didn't talk about was that CBET has open enrollment. Students can enter and leave any time. This is less of an issue in my Sanchez afternoon class as my enrollment is pretty stable but it does affect my Healthy Start (which may just be a shadow group), and may affect Amanda's night class. That means we need to be able to integrate new students at any time. And students can leave abruptly - work or other conflicts come up. Or they want to try another teacher. There is no clear beginning and end. This may play into our project and we just need to take that into account (Electronic Message, June 19)

In the program, students could join and leave at any time during a session. It was also common for students to be late to their evening classes because of their work schedules and transportation problems. Many students came after working 12 hour days in the fields. Most came on foot or by bus. "They do not own cars" (Coordinator, Personal communication, June, 2003). Although attendance was better in Amanda's class during this session, she had an extremely transient class, with 17 new students arriving after the first day of class: 11 of the new students arrived after the first week, 5 students arrived almost a month later, and 2 students arrived in the last week of class. On July 19, Amanda also reported losing students during a class break. She wrote (in exact words):

> I know that when we took breaks I was losing a few of them, so this past week we didn't take any breaks. We also are having an influx of new people; 7 in two days. (Electronic Journal)

Student tardiness and absences were not the only unpredictable factor in Amanda's class. Amanda also had an unpredictable classroom environment. She had surprises in regard to the computers, lab assistants, and class room space. Amanda's message of July 16 captures some of the daily chaos. She wrote (in exact words):

> The printer wasn't working some people lost their work because they turned off the computer with out waiting for us to help them save. At 8:15 after half an hour

of trying everything imaginable for the printer we called Rose to make sure we knew how to attach their work and in the end that didn't work either so we saved what we "could".My free yahoo account wouldn't let me attach their work so we could print out at another site.

Problems in the lab were frequent. Students were not allowed to save work on the desktop because the computers were part of the elementary school's lab. The printer was constantly breaking down, and the computer mice functioned poorly. I did not think the situation could get worse. It did. On July 23, Amanda was told that the lab was not ready because the janitor had unplugged the computers before mopping the floors. Amanda worked with the students in the classroom for a while. When they finally got to the lab there were some problems with the Internet connection and most of the mice were too dusty to work properly. The students did not have time to complete their work on the computer that night (Field Notes July 23, 2003).

Amanda's lab assistants were young Mexican migrant children who were often unable to show. Amanda did not have a computer projector. She spoke little Spanish. The situation did not make it easy to plan and carry out computer lessons. On July 2, when Amanda tried to reassure students that their lab assistant was helping to fix more things, they joked, "maybe he is coming in five weeks."

In addition to the unreliability of the computers and lab assistants, Amanda faced problems with her classroom. These were not problems Amanda and her students complained about but they were conditions that are noticeably different from the average university, private institution, and college educational setting. Amanda's classroom and lab were housed within the local elementary school. That summer, temperatures hit record highs: 99 to 100 degrees Fahrenheit. The air conditioning was not working. Adult

students crouched into child sized chairs around child sized tables. If Amanda "was lucky," the elementary school teachers would sometimes leave her some space on the board. "DO NOT ERASE" was written across the board in large letters where other lessons had been posted. No one really complained until one day, their class was altogether unavailable. On July 31, I recorded the following scene.

> Classroom in a Corner
> When I arrived in the computer lab, Amanda told me she had no classroom and no access to her materials. All the furniture: chairs, tables, and desk, was stacked up in a corner blocking the cabinets where she kept her things. A large pile of dust had been swept into the middle of the room. The room was half cleaned. No one had warned Amanda about the plan to clean that day. (Field Notes, July 31)

On top of the unpredictable classroom environment, Amanda had "every interruption known to man" (Amanda, CATESOL presentation, spring 2004). The interruptions ranged from unexpected emergency events to staff members who just felt the need to talk. Amanda commented on the situation in her final interview.

> A: I mean we had shootings. We've had the teacher who walked in. We had unruly children. We had all kinds of things happen at this site.
> R: So all of the distractions -
> A: Not only distractions, this is like life and death situations (p.10)[5].

The interruptions were exasperated by the initially high dependence of the students upon the teacher. As one student explained, *"[Ella] se ponía nerviosa porque, uno no más estaba teacher, teacher"* [She was anxious because everyone was just "teacher, teacher"] (Bertha, Final Interview). In actuality, Amanda is an exceptionally calm person, "some one who goes with the flow" (Initial Interview, June 2003). However, the combination of constant interuptions and multiple simultaneous demands were enough to make anyone

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[5] "R" refers to researcher

seem "nerviosa" [anxious]. Amanda described the hectic nature of her classes in her

Electronic Journal:

> The janitor chased kids on bikes out of the courtyard and called the police, and a neighbor wandered into class looking for a lost kid, several students only wanted to work on the computers and ditched class.

> After 6:15 we had a student walk in every 15 minutes. [I] stopped the class and asked them what they wanted to do. Eventually they decided they didn't like the interruptions and elected a person to take care of those who came in late so the groups could continue working.

> Tonite we had little kids coming across the courtyard unattended, no air-conditioning and a shooting at another site after class, (Amanda, Electronic Journal, July 10).

Amanda's challenging classroom circumstances included an unpredictable classroom

environment, multiple demands and interruptions, student resistance, an extremely

transient class, and a mixed group of students many of whom lacked experience in

English, computers, and school in general. It should be noted that in addition to the

mentioned challenges, there were physical and mental barriers. Several of her elderly

students said they were having trouble learning, manipulating the computer mouse, and

remembering things. Many of Amanda's students were exhausted from working in the

fields all day. They came to class with red faces, bloodshot eyes, and dried sweat. The

difficulty of the learning situation is captured well in one dialogue I had with a student

named Sonia. On July 9, Amanda asked me to speak with Sonia in Spanish to try to find

out why she had disappeared from Amanda's class the week before. When I asked Sonia

about her absences, she said, "No se me pega nada. Soy olvidadiza. Estoy cansada" [I

don't get anything. I'm forgetful. I am tired]. I tried to help Sonia problem solve. "What

about writing things down or asking for help from the teacher?" I asked. Sonia replied,

"no sé como" [I don't know how]**.** She described the previous class nostalgically. She talked about how the teacher had them sit in "little rows" and repeat English language sentences. I asked her if she remembered what she had learned in that class. Sonia said no. She was having trouble holding onto things in general. This was the classroom situation Amanda entered into when she started implementing PBL.

The background of Amanda's students not only affected the learning experience, it also affected the ways in which the research instruments were responded to in the study. For the most part, students in Amanda's class had trouble filling out the forms we provided. In particular, they had trouble with the initial background questionnaire because it was the first form. The teacher, coordinator, and I all worked with students in Spanish and English to help them understand the initial background questionnaire. The students had many questions such as what to put if they had no job, or if their children were in Mexico. Students who came in late and missed the initial explanation of the questionnaire seemed overwhelmed.

Comparing the students' initial questionnaires to the final questionnaires also proved difficult because of the transient nature of the class: 13 participants completed the initial questionnaire and 9 participants completed the final questionnaire. However, within these two groups only seven student participants completed both questionnaires. More students completed the questionnaires, but they were removed from the study either because they started two weeks into the program or left two weeks before the program ended. Thus, the questionnaire results discussed in this study are based on a sample of eight participants who completed the program from beginning to end. Needless to say, the results of the background questionnaires and other forms completed in the beginning

class should be interpreted cautiously in this study. Throughout the following analysis, data have only been taken from the forms in cases where these are supported by data from other instruments.

In comparison to Amanda's beginning class with all of its challenging classroom circumstances, the situation of Catherine's intermediate class was relatively ideal. The intermediate class had a state of the art computer lab with air conditioning and new furnishing. The lab assistant came everyday and there were few interruptions to the class. Catherine had a small class of seven participants who attended regularly. The students had more prior experience studying English and computers. They had less trouble completing the background questionnaires and no noticeable trouble with other instruments in the study.

Affective Factors

In the following section I discuss the affective factors, or emotional elements of the student learning experience in the two classes. The first part focuses on participant lows and highs in confidence. The second part describes students' predominately positive or "happy" attitudes towards the PBL classes. The third part examines the different types of engagement and motivation students exhibited. Lastly, I discuss student independence, pride, and ownership.

Low Confidence to Start

What kind of confidence did student participants have to start? From the beginning of the study, a number of the female participants demonstrated low confidence

in regard to their English, computer skills, and abilities in general. In Catherine's class, Lillia, one of the most advanced students in the study, gave herself low assessments overall. In the initial background questionnaire, Lillia rated herself fairly low on her computer and English language skills (1's, 2's, and 3's on a 5 point scale). Lillia's classmate, Miriam *was* painfully shy. She spoke little and with a soft hesitant voice during the first few weeks of class. Lupe in Amanda's class was another example. When she started the CBET program in 1999, she told the coordinator that she did not know if they wanted her in the program because she was "tan burra" [dumb as a mule]. She said she did not know how to read or write or use the computers (Coordinator, Personal communication, July 23, 2003). In Amanda's class insecurity was often manifested in the fact that the female students frequently avoided group roles of responsibility. For example, Lupe did not feel at first that she was capable of being a speaker for her group. Despite having lived in the United States and studied English for over two years, she thought that she did not know "any" English.

> R: Great, thank you. O.k. we need one speaker in one group.
> *Lupe: yo no, porque no se nada en inglés ((laugh))*
>
> [Lupe: Not me because I don't know anything in English ((laugh)) (Class Transcript, July 3)

Lupe like other participants in the two classes demonstrated some changes in confidence during the study. The results of the initial and final background questionnaires combined with other data indicate some increases in student confidence levels in regard to specific reading, writing, speaking, and computer tasks. These results are detailed in the next section. I begin with a discussion of confidence increases versus lows in the

beginning class and follow with a discussion of confidence increases in the intermediate class.

Confidence Increases and Lows Beginning Class

In the beginning class, student participants increased their confidence ratings overall in the final background questionnaires. Table 3 shows the general pattern of response each participant had from the initial to the final background questionnaire. This table is a simplified version of the charts used for analysis. It allows us to see where confidence levels went "up," "down," or stayed the "same[6]."

Table 3: Changes in Final Background Questionnaire: Amanda's Class

Sections	Antonio	Aricela	Arturo	Fernando	Javier	Mario	Sonia
Internet	Up	Up	Up	Same	Up	Up	Same
Computer	Up	Up	Same	Same	Up	Up	Same
Reading	Up	Up	Same	Same	Up	Up	Up
Writing	Down	Up	Same	Up	Up	Up	Same
Speaking	Up	Up	Same	Up	Up	Up	Same
Help kids	Up	Up	Same	Up	Up	No answer	Same

Key:
Up = an overall increase of one or more points
Same = no change in rating
Down = an overall decrease of one or more points

As indicated in Table 3, three students (Aricela, Javier, and Mario) increased their confidence ratings in nearly all sections of the questionnaire. Antonio increased most of his ratings, and Fernando increased half of his ratings while Arturo and Sonia kept their

ratings nearly the same (see Computer Development and Linguistic Gains for specific areas of increase and averages). Although the data suggest that the majority of the students (five out of seven) increased their confidence ratings, the average section increase is less than a half of a point. On the one hand, these results need to be interpreted with caution given the difficulty the beginning students had with the initial background questionnaire. On the other hand, the individual participant responses are meaningful when we look at their responses in relation to other data from the study. Combined data suggest that the most student participants and the lower level students in particular, increased their confidence in relation to specific English and computer skills. However, two participants, Arturo and Antonio, demonstrated a decrease in confidence in relation to these general skill areas. The following section further examines the theme of confidence building in relation to the focus participants Lupe and Fernando. Arturo and Antonios' cases are discussed in addition because they represent an important deviation in the study.

Although Lupe only completed the initial and not the final background questionnaire, other data point to her as a poignant example of confidence building. Lupe's surge in confidence is apparent in her actions during class as well as in her reports during the final interview. Lupe went from being completely dependent upon others in the first weeks to being a teacher of others in the last weeks. In the first week, Lupe did not know how to turn on the computer, how to select and start a program, to word process, or to go to the Internet. On July 3, I noted:

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6 Lupe did not complete the final questionnaire and therefore does not appear in this table.

Lupe just sat waiting for a teacher for about ten minutes because she did not know how to engage the typing program on her computer screen. (Field Notes)

In contrast, in the final week, Lupe could be heard instructing others in the class. In the following dialogue she tells a male student how to use a mouse and to change the font style and size on the computer.

Lupe: Busca el "mouse"
Male student: "Mouse" ¿aquí está?"
Lupe: Cambia el estilo de la letra grande o pequeña en la computadora.
Lupe: Cambiele, usted sabe hacerlo?
Male student: ¿Qué si lo cambio?
Lupe: Si sabe usarlo para cambiar la letra, usa el ratón. ¿Sabe usar el ratón?
Male student: ¿Cuál?
Lupe: El que está en la computadora

[Lupe: Look for the "mouse"
Male student: Here is the "mouse"?"
Lupe: Change the style of letter large or small on the computer.
Lupe: Change it. Do you know how to do it?
Male student: What, if I know how to change it?
Lupe: If you know how to use it to change the letter, use the mouse. Do you know how to use the mouse?
Male student: Which?
Lupe: The on that is on the computer (Class Transcript, August 6)

Lupe's inclination to take on this teaching role in the last week of class seems reflective of her overall increase in confidence. During the interview, Lupe was sure in her answers and quick to tell me why. She expressed confidence about her learning in the class. She said that she had learned a lot in general. She voiced confidence in regard to teaching her children, working on the computer, and reading and writing in English. Lupe said she had learned how to help her children with math in Kindergarten. She said she knew what Kindergarten was and that she could take her children to the store to teach them how to

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compare prices. She also expressed confidence in her ability to teach her children what she had learned on the computer.

> *Sí, ahora que ya regresaron les enseñaré a mis hijos todo lo que aprendí, y sí, sí he aprendido varias cosas.*

> [Yes, now when my children return I will teach them everything that I learned, and yes, yes I have learned a variety of things].

For the computer, Lupe said she had learned how to "escribir las palabras" [write the words] at first in Spanish and later in English. I asked her if she knew how to change the font size. She told me how to do it and showed me her work:

> E*l tamaño se pone número. Pero sí, la cambié porque aquí la traigo.*

> [For the size you put the number. But yes, I changed them because I brought it here] ((pointing to class work she had with her)).

I asked Lupe about other word processing such as centering and using the shift key to make capital letters. Lupe replied confidently,

> *"Sí sé como, como por ejemplo aquí está el borrador y con ese borro todo, todo."*

> [Yes I know how, like for example, here is the eraser and with this you erase everything, everything.].

Lupe also said she knew how to use the mouse, search for images on the Internet in Google, and copy and paste the images into Microsoft word. She explained the process to me in detail and exclaimed, "Sí yo aprendí mucho!" [Yes, I learned a lot!].

In regard to English, Lupe said she had learned vocabulary, "varias palabras" [various words] such as mouse, keyboard, text, and also the alphabet. She said she could understand many words and she could say a few things. Lupe also reported that she could write in English:

R: Escribiendo inglés también, ¿Aprendió algo?
Lupe: Sí también lo sé escribir]
R: Y usted aprendió a escribir este verano o usted ya sabía desde antes?
Lupe: Yo en este verano he aprendido más. Porque ya sé decir "ansering" es que
ya esta contestando y también "finís" es que ya termino, varias cosas como
« asking » es que está preguntando, es « question ," no. Eso lo aprendí yo aquí.

R: also writing in English, did you learn anything?
Lupe: Yes, I also know how to write
R: And did you learn how to write this summer or did you know from before?
Lupe: This Summer I have learned more. Because I already know how to say"
ansering" I know it's you are answering ((translating)) and also "finis" is I am
already done and various things like "asking" is that you are questioning
((translating)), the "question," no. This I learned here.

In addition, Lupe said she understood the teacher's directions better and understood more

what English speakers outside of class were saying. I asked Lupe if she could read the

worksheets from class in English and if she had learned some English with them. She

replied with certainty:

Sí, sí aprendí. Todo esto yo ya lo sé leer y escribir sin copiar."

[Yes, yes I learned. All of this I already know how to read and write it without
copying].

Overall, Lupe was sure in her answers during the interview. She made bold statements: "I

already know all of this," "I know how to write in English," "I learned a lot!" and she did

not hesitate to explain how different things she had learned were done. The Lupe I met in

the final interview was confident in her learning and abilities in the class.

Fernando, one of the most advanced English speakers and computer users in the

class, had less noticeable changes in confidence than Lupe, but he was clearly invigorated

by his experience. He felt he had developed skills in the area of computers and English

writing, vocabulary, and speaking. From the initial to the final background questionnaire,

Fernando increased his confidence ratings in the specific areas of writing English on the

computer, speaking English in class with peers, and helping children with their school work. However, his overall ratings stayed the same for the section on reading English on the Internet, something students did very little of in Amanda's class. In the formative assessment of July 17, Fernando reported having learned a large number of English words. In the final reflection, he said he had gone from "needing too much help" on the computer in the beginning to being able to "use the computer in different programs and to go to the Internet" (Reflection, August 6). In his final interview, Fernando elaborated with detail on the computer, English language vocabulary, and speaking skills he had learned. He was animated and energetic as he explained how his role as translator and team leader brought him different types of learning and satisfaction. In summary, although changes in Fernando's confidence were less apparent than changes in Lupe's confidence, Fernando did increase his confidence in specific areas. He felt more confident about certain computer skills, English language vocabulary, and speaking. It is also evident that the role he played in helping others gave him a boost in self-esteem.

The teacher Amanda was highly confident that her students had improved. She felt that they had increased their skills in the areas of reading English on the Internet, writing in English on the computer, speaking English in class with peers, and helping their children with schoolwork. For these areas in the initial questionnaire, Amanda gave mostly "1's," "No chance," a few "2's," "Some chance but only with lots of help," and one "3," "Good chance if I had some help." In the final questionnaire, Amanda increased her ratings by 4 points on all items, except for number "3" "search on the Internet for lessons to help their children/child with school" for which she wrote "n/a" because the

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class did not end up doing the activity. Amanda clearly increased her confidence in the students' abilities in a variety of areas.

In contrast, two students Arturo and Antonio expressed low confidence in regard to their learning. Their confidence lows are a deviation in the trend towards confidence building in the study and, therefore, important to look at further. In the following section, I discuss specific areas of confidence and look at some reasons why the participants decreased their confidence in specific areas. Arturo's story is discussed first followed by Antonio's story.

Arturo is male, age 66 at the time of the study. He has an elementary school education. He was a retired forklift driver and grandfather who practiced English with his grandchildren. During the study, Arturo did not demonstrate an increase in confidence in regard to English reading, writing, or speaking skills, and he had a drop in confidence in relation to his computer skills. He kept the same number"3" (Good chance with some help) ratings in his initial and final questionnaires. Furthermore, he assessed himself as "intermediate" computer and Internet user in the initial questionnaire and reduced his assessment to a "beginner" in the final questionnaire. The initial assessment may have been a mistake because he had not used a computer on his own before the summer. It is also possible that with experience on the computer, Arturo realized what was entailed and assessed himself more accurately. Other data indicate that he did not feel comfortable on the computer and was not particularly productive on it. In his interview, Arturo said the little English he knew was coming back to him, but he was not so sure about the computer. He had only learned "a escribir y a cambiar la letra, cuando se equivoca uno, borrarlo" [to write and change the font, when one makes a mistake, erase it] (Final

Interview, p.1). Arturo made a point of explaining that he was having trouble with his memory because of his age. He said he needed more repetition. He also said that it was difficult for him to manipulate the computer because of his arthritis. It is possible that Arturo had a drop in confidence in relation to work on the computer because of his inability to complete certain tasks. This is confirmed from the production side. Arturo did not provide copies of book pages with pictures from the Internet aside from his final one, the cover of the book. His cover was artfully rendered, but it contained the same image produced by Fernando and other students who had been helping him. Overall the situation was not one that led Arturo to increase his confidence in the areas of English language reading, writing, and speaking, and he was discouraged by the experience with computers.

Antonio was a male participant, age 47 at the time of the study. He had no formal education. He had been a field worker and was on disability. He was a father of two children ages 11 and 14 at the time of the study. Antonio felt insecure about his learning overall. In the final background questionnaire, Antonio improved his ratings in reading and speaking; however, like Arturo he dropped them in the area of "writing on the computer." In his interview, Antonio expressed a lack of confidence in his language, computer, and general learning abilities. He said he was not capable of learning much English and that he had learned few computer skills. He also said that he had difficulty learning and remembering things in general. Antonio thought he was "too slow" because he had no formal education and could hardly read and write in Spanish. He was embarrassed that he could not learn more and express himself well. Antonio also explained that he had been injured working in the fields and had just had surgery. His

back was really hurting him: he had trouble sitting for long periods of time and had to take pills for the pain. While Antonio's physical problems may have made learning more difficult, he attributed his learning difficulties to low ability. However, Antonio's self-assessments do not match evidence of learning in the study. Other data indicate that Antonio learned some computers skills and English language vocabulary.

Unfortunately, Antonio did not improve his confidence in his general learning abilities and linguistic skills over the course of the study. Antonio and Arturo were two exceptions to the general trend in confidence increases[7]. Other student participants like Lupe and Fernando demonstrated confidence increases in specific skill areas.

Confidence Increases Intermediate Class

Similarly, participants in Catherine's intermediate class increased their confidence in specific skill areas. Increases in confidence in the intermediate class are most apparent in the questionnaires, which are more informative on their own than those of the beginning class. Participants in Catherine's class had an easier time filling out the questionnaires in general; "They went through much faster and more easily than we expected" (Field Notes, June 26). They also gave higher confidence ratings of their skills than expected. Table 4 shows the general pattern of response each participant had from the initial background questionnaire to the final background questionnaire in the intermediate class.

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[7] During member checks, the coordinator mentioned that neither student gave up on the program. Both continued attending regularly.

Table 4: Changes in Final Background Questionnaire: Catherine's Class

Section	Alicia	Lillia	Miriam	Monica	Patricia	Sarai
Internet	Down	Same	Up	UP	Same	Up
Computer	Same	Same	Same	Same	Same	Same
Reading	Up	Up	Up	Up	Up	Up
Writing	Up	Up	Up	Up	Up	Up
Speaking	Same	Up	Up	Up	Up	Up
Help kids	Up	Same	Same	Skipped Q	Skipped Q	Skipped Q

Key:
Up = an overall increase of one or more points
Same = no change in rating
Down = an overall decrease

As indicated in Table 4, three out of six participants rated themselves higher in the area of the Internet. In the areas of reading, writing, speaking, and helping their "kids," participants rated themselves higher on average on all items in the final background questionnaire. They increased their overall confidence ratings per section by an average of 1.5 points in the final background questionnaire. Increases are most apparent in the areas of the Internet and writing.

In response to question nine, "Internet Experience," three students gave themselves higher ratings on the final questionnaire. Miriam, for example, moved from "beginner" to "intermediate." The teacher also improved her rating from "mostly intermediate" to "100% intermediate." For questions one and four, "Read and comprehend the stat [sic] standards for elementary school education" and "Reading

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English on the Internet," students and teacher gave unanimously higher ratings, with an average of 1.7 in the initial questionnaire and an average of 3 in the final questionnaire. In response to question five, "Select useful resources from an English web page" the overall rating went from one of low confidence (2-3, 3, 3, 3, 3, 3, 0) to one of more confidence (4, 4, 3, 3, 4, 5, 3). Likewise, four out of six students and the teacher increased their ratings for number six "Navigate through an English language website."

In the area of "Writing English on the Computer," four out of six students and the teacher increased their ratings for question ten, "List ideas in English;" eleven, "Copy information from the Internet onto the computer;" and thirteen, "Create lessons in English for my children." The responses were most enthusiastic for number ten. For "List ideas in English" ratings went from an average of "2," "Some chance but only with lots of help," to an average of "4, "Fairly certain."

In Summary, background questionnaires in Catherine's class suggest overall increases in student confidence especially in the areas of writing and working on the Internet. These increases are consistent with results from other data. Catherine saw that students had gained some confidence during the session. Reflecting upon the PBL experience, she said:

> Initially it was hard because there was a lot of little things, like, did they had enough skills but they got enough confidence that they were okay to do stuff (Final Interview p.18).

The trend in confidence building is most apparent for one lower level participant in the class: Miriam. Miriam's story is moving. On the final background questionnaire, roughly 43% of Miriam's confidence ratings (nine out of twenty one) increased. The rest

of her ratings stayed the same. There were no decreases. In the initial questionnaire, Miriam rated herself as a "beginner" on the Internet and in the final questionnaire she rated herself as an "intermediate" Internet user. Miriam moved from a 2, "Some chance but only with lots of help" to a 3, "Good chance if I had some help" in the following areas:

1. Reading and comprehending standards on elementary education
6. Navigating through an English language website
7. Guessing meaning in context in English websites
12. Write English Language Titles
13. Create lessons in English for my children

She also moved from a 3, "Good chance if I had some help" to a 4, "Fairly Certain" in the areas of "Participate in class discussion in English" and "Work on a group assignment in English." Most remarkable is Miriam's change in confidence in regard to speaking English with her peers. Under the section "Speaking English in class and with peers " item 17, "Discuss class assignments in English with a partner," Miriam went from a 2, "Some chance but only with lots of help" to a 4, "Fairly Certain." This increase in her confidence rating confirms teacher reports and researcher observations.

Miriam's story is similar to Lupe's in Amanda's class. She seems to have had an overall boast in self-esteem. When Miriam started the session, she rarely spoke up in class and when she did she would speak softly lowering her head. In the first few weeks, she relied on a good deal of help from her classmates, speaking primarily in Spanish, but closely following the directions of the teacher. She was eager to do everything she was supposed to do. Catherine said she hated to use the word "obedient" but that was the one that came to mind. In week four of the session, Miriam's teacher and I noticed some changes. I recorded the following scene in my field notes on July 17:

Sarai, Patricia, and Miraim are working together. Miriam is actively participating. She was assertive! She corrected Patricia's spelling in English. Sarai was speaking and Miriam interrupted to explain something.

Likewise, Catherine noted that Miriam was participating more in class discussions. She was also being more assertive in general. On July 23, Miriam practically led an in-class rebellion. She literally refused to stop working on her project as she ignored the teacher's friendly but repeated attempts to get students to gather at the tables. Miriam's final interview further suggests some boosts in confidence. Miriam insisted on telling me certain things before I began the questions. She wanted to be sure I knew why she had been absent. During the interview, Miriam was enthusiastic. She repeatedly initiated English language conversation. She expressed confidence in her learning and in the completion of the newsletter. I asked Miriam how she felt now that the newsletter was almost done. She responded as follows:

Es algo magnifica real que sería bonito que podríamos hacerlo bien y que aprendíamos como hacerlos. Y darnos una idea de cómo se hacen

[It is something wonderful that will be pretty that we could do well and that we learned how to do. And it gives us an idea of how it [the newsletter] is done.

Then she eagerly showed me her article. While Miriam was absent, her classmates had decided to put her article on the first page because the topic, "Summer 2003", was a main part of the newsletter theme. Miriam said it was "lo que más me emociono" [what moved her most]. During the interview, she beamed with pride as she explained how excited she was when she found out her article was on the first page.

Estamos muy contenta en mi casa. Le dije a mi esposo, ya está el proyecto, el trabajo que habíamos empezado, que yo no alcanze a terminar ((pause)). Y el me dijo y cómo quedó? Y dije bien bonito que hace el. Estoy" very very happy" porque el mio está encabeza de todo el periódico.

[We are very happy in my house. I told my husband, it's already done the project, the work that we had started, that I did not manage to finish ((pause)). And he asked me how it came out. I said very pretty how it is made. I am "very very happy" because mine is at the head of the whole newspaper].

Miriam felt a sense of accomplishment in her work on the newsletter. She had begun as a very shy student who seemed so fragile. Catherine was touched by her new sense of self-importance.

I mean Miriam said I went home and told my husband I was on the front of the newsletter. And that was like a big – I mean that was something she took from school home and shared with her family. And you know did all that around it. So um, I forgot where, get me back on track again ((laughing… tears welling up)) (Final Interview, p.9).

Miriam also expressed confidence in regard to her ability to learn more English.

Miriam: porque yo creo que avancé un poco más. Yo yo creo (….) una idea. De que lo voy a lograr. "You know" tal vez ahorita, ahorita sé poquito. Pero sometimes ((pause)) mucho.

[Miriam: because I believe that I'm going forward a little more. I, I believe (…) an idea that I'm going to achieve it. "You know"perhaps now, now I know little but "sometimes" ((pause)) a lot].

Catherine was moved that Miriam had made so much progress; her seemingly meek student had decided to "stand up" to the task:

I think this summer. For this particular student, she just started coming. She checked into it. And I think she just kinda – oh I'm gonna stand up to this thing! Cause we had done it prior and wasn't as engaged as she was this summer. She was she had a determination with it. I think this summer. Maybe it was less dramatic for other students. I mean everyone learned something and increased their competence. I think for her she really got over some really big fears. And I think realized that she had a skill. I think she got that (Final Interview p.14, Catherine).

Like Lupe in Amanda's beginning class, Miriam clearly increased her confidence in specific ways over the course of the summer. As Catherine explained, the surges in confidence were perhaps less dramatic for other students. The advanced students in

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particular were more humble overall in their self-assessments, but the combined data suggests they had some boosts as well.

Lillia, who was one of the most advanced students in the study, had modest ratings overall. In the intermediate class, she was one of the few students who rated herself as a beginner on the Internet in the initial and in the final questionnaire. For the computer, she rated herself as "Intermediate" in both questionnaires. In the confidence rating section of the questionnaire, Lillia had a few increases. In the initial questionnaire, she included two 2's "Some chance but only with lots of help" and one 1, "No chance." The rest of her ratings were "3" "Some chance but only with lots of help." In her final questionnaire, everything was a "3." In total, Lillia improved her ratings in three areas:

1. Read and comprehend the stat (typo for state) standards for elementary school education from a "1" to a "3"
2. Conduct a search in English on the Internet from "2" to "3"
17. Discuss class assignments in English with a partner from "2" to "3)

These three areas were the areas in which the class worked the most. Did Lillia not feel an increase in confidence in the other areas? Lillia was equally modest in her final reflections and interviews prefacing her assessments with the words "a little" and "more or less." In her final reflection, Lillia wrote (in exact words) she had learned, "como perfeccionar un poco más la gramatica Inglesa" [how to perfect English grammar a little more]. In her final interview, Lillia said she knew now, "more or less," how to do a newsletter. Perhaps more advanced students like Lillia had less noticeable growth. Or perhaps she was just aware of her level in relation to American college students. Lillia was on of the few CBET students also attending the local community college. In addition, she had begun to date the American lab assistant. Perhaps her contact with native English

speakers and a computer expert made her more humble. Possibly because of her level and contact with "experts," Lillia knew she had much more to learn.

Attitudes

Overall, participants' attitudes were positive. The majority of the participants expressed positive attitudes the majority of the time. They spoke positively about the class in general, the group work, the computer, and their teachers. Their contentment was expressed during class, in their formative assessments, course evaluations, reflections, interviews, and final interview responses.

In Amanda's beginning class, the response to the formative assessment administered on July 17 was overwhelmingly positive. Ten out of ten participants expressed positive feelings about the class: four said they liked the class, six said they liked the computers, and two said they liked the group work. After the assessment, the coordinator asked students to respond on the back with their opinion of the course. Eight participants responded. Four said they were very happy with the class. Two said it was good, one said it was interesting, and another said she liked the computers and the teacher.

In Catherine's intermediate class, students dropped expressive comments into learning questions. When asked, "What did you learn about making a newsletter?" a female student wrote, "I leanr a lot This class and I hope This I will stay lot year" [I learned a lot in this class, and I hope I will stay a lot this year]. During her final interview, I asked Lillia how the experience in the class had been different from other classes. She said it was the best experience she had had.

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Lillia: O en esta, en este summer
R: mmm en este yeah this summer particularly
Lillia: sí ha sido la mejor que he tenido

[Lillia: Oh in this, this summer
R: mmm in this yeah this summer particularly
Lillia: yes it has been the best that I have had]

Although evaluations of the course were not solicited in the interviews, most of the

participants volunteered positive feedback in between questions and in response to the

final question, "Do you have anything else to add?" Lupe in the beginning class said,

> *Pues como le dijera, yo sí me siento muy a gusto, aquí en nuestra clase. Será por que más ya va uno avanzando y avanzando.*

> [Well, how could I tell you, yes I feel very pleased, here in this class. It is because we are advancing more and more].

Likewise, Amanda, the teacher of the beginning class, enthusiastically described

students' feelings of happiness at the end of the session:

> They are s:o <u>happy</u>! They are just thrilled! And they can't wait to come back on August 20th. (Final Interview, p.17)

In the intermediate class, Catherine's student Miriam replied to the question of whether

she had anything else to add by complimenting the class and the teacher:

> *Pues todo lo he dicho, es muy interesante la clase y la maestra enseña muy bien*

> [Well, everything I have told you, the class is very interesting and the teacher teaches well]

Responses to the final post project interview questions were similarly positive in the two

classes. Replying to question three, "What new feelings have you had in the class since

last week?," Lillia in Catherine's class wrote:

> *Sentimientos bonitos porque descubrí que puedo hacer cosas nuevas y interesantes para mi, y puedo aprender cosas nuevas cada ves más.*

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[Beautiful feelings because I discovered that I can do new things and interesting for me, and I can learn new things each time.]

In Amanda's class, even Antonio's response to the question "What new feelings have you had in the class since last week?" was positive. He said his feeling were "muy buenos" [very good ones]. Fernando was positive about the class dynamics and group work. He wrote:

> *En la última semana, y desde el comienzo este projecto, los sentimientos han sido de compañerismo y ayuda entre nosotros.*
>
> [In the last week, and from the beginning of this project, the feelings have been ones of comradeship and collaboration among us]

At first glance, "Social desirability," the desire to give responses that would please the researcher, teachers or coordinator, may seem to have played a role in student response to the research instruments. The classes were part of a free program and students were from a culture where one is usually taught to respect authority. However, five different factors indicate sincerity and honesty in student responses.

One factor was that the teachers and coordinator talked with students before the formative assessments about the importance of being honest. Another factor is that students gave a number of constructive criticisms in the different instruments implying student willingness to share opinions openly. For example, in the course evaluations in the beginning class, three students said they would like it better if there was more Spanish translation. One also asked for more Internet addresses for learning. In his interview, another beginning student, Antonio, said he had trouble following along on the computer and in the class in general. He said he preferred more traditional instruction. This student

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had more positive comments to the post project interview questions, but he was not afraid to voice a number of complaints during the face-to-face interview. Catherine's students also admitted to having periods of frustration and difficulty. On July 23, after Catherine gave an exciting overview of the newsletter project, she asked her students what they thought of it. Smiling, Miriam said, "For me it's difficult." Catherine's students seemed comfortable sharing their emotions in general. During the interviews, I asked Lillia how she felt in the beginning when they first started the project:

> *Lillia: muy frustrada*
> *R: mmm*
> *Lillia: ((laughing)) porque yo pensaba, yo no puedo, yo no voy a poder hacer, como no recordaba cada cosa que debía hacer*
>
> Lillia: very frustrated
> R: mmm
> Lillia: ((laughing)) because I thought, I cannot, I am not going to be able, since I could not remember each thing that I was supposed to do

These students grew comfortable with their teachers and they seemed to feel safe enough to express their real opinions.

A third factor that makes the student responses seem more genuine is that much of the expression of positive feelings was spontaneous and unsolicited. For example, in response to the interview question, "Do you have anything else to add about the class this summer?" many students talked about being happy and volunteered praise towards the class and the teacher. I did not ask for evaluative comments during the interviews, but most of the interviewees felt compelled to express their appreciation and approval. The fourth factor, which adds validity to the previous three, is that the positive attitudes expressed during this study were not a given in the program at all times. Amanda had plenty of discontent in her class before and a while after the study. Describing her class

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prior to implementation of PBL, Amanda said, "They practically were ready to tar and feather me and put me in the pot."

In conclusion, the encouragement students had to speak their minds, the fact that they did volunteer constructive criticism, the spontaneity of the praise they volunteered, and actual instances of student resistance in the program prior to the study, all suggest students' responses were genuine. Social desirability probably played only a minor role in the predominately positive attitudes expressed by students throughout the study data.

Engagement

Students were, for the most part, engaged in the classwork. In Amanda's class students participated widely in discussions about the problems they had helping their children in American schools. Even while unsupervised by teachers and frequently speaking Spanish, their work in teams and pairs was pre-dominantly on task. In 20 different recorded sessions and 9 class observations, only three instances of off-task behavior were apparent in the beginning class. Furthermore, students were clearly involved in their group work and in the PBL problem of helping their children with math in American schools. From the first PBL session, the teacher had to work to disengage students from their teams. The connection between math, real life, and what students already knew was engaging. This is exemplified in Amanda's July 24 class. Students responded to the theme of the day, which was "shopping." The concept of using coupons while shopping was used to introduce math that the students could teach to their children. In the following excerpt, students are on task; answering the discussion questions, enjoying the theme of shopping, and applying what they know to the lesson:

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Amanda: Tonight we are going to go shopping. Teach your kids how to go shopping.¿Cómo se dice teach your kids how to go shopping?
Aricela: De que me gusta me gusta ((Talking to team mate)).
Lupe: Sí, de que nos gusta, nos gusta. No más que nos digan donde y con qué. Usando cupones, comprando productos significado de los numeros

((Students doing worksheet questions, comparing coupons and prices))

Lupe: ?Cómo puede enseñar estas matemáticas a sus hijos? ((reading the question))
((students talking at the same time))
Lupe: estas matemáticas se las puedo enseñar amis hijos en la tienda.
Antonia: ¿Cómo?
Lupe: Sí estas matemáticas se las puedo enseñar a mis hijos en la tienda.
Antonia: Cuando vamos de compras.
Lupe: Porque allí miramos cuanto cuesta.
Aricela: Cuando vamos de shopping. Escribelo en "English."

[Amanda: Tonight we are going to go shopping. Teach your kids how to go shopping. How do you say, teach your kids how to go shopping?
Aricela: What I like I like
Lupe: Yes what we like, we like. All you have to say is where and with what. Using coupons, buying products means numbers

((Students doing worksheet questions, comparing coupons and prices))

Lupe: How can you teach this math to your kids? ((reading the question))
((students talking at the same time))
Lupe: I know I can teach this math to my kids in the store.
Aricela: How?
Lupe: Yes, I know I can teach this math to my kids in the store.
Aricela: When we go shopping.
Lupe: Because there we look at how much things cost.
Aricela: When we go "shopping." Write it in "English"].

This excerpt is a slice of a long exchange of information about shopping, numbers, and related English vocabulary. The length of time on task suggests engagement. Lupe, Aricela, and other students showed enthusiasm by repeatedly using the expression "me gusta" (it pleases me). The task seemed relevant to students. Lupe immediately comes up with a way to teach the math to her children by looking at costs when they go shopping.

As they talked, the group answered the worksheet questions fully and with relative ease. Using shopping to teach math was something they could easily conceive of as a way to help their children. In her final interview 14 days later, Lupe brought up the point that she knew now that she could prepare her grandchild for Kindergarten math by taking her to the store to compare prices. Lupe remembered the exercise and how to apply it, and she remembered how to say the words "Kindergarten" and "shopping" in English. She was clearly engaged in the content and language of the "shopping" theme.

By late July, Amanda's students were highly engaged in their work on the computer. One demonstration of their engagement was the fact that many students stayed past the end of class to get printed copies of their work. This was significant because class usually ended just before 8:30pm. It was dark, many students had worked long days, they had to return home on foot, most of them had children waiting for them in the daycare, and the neighborhood was not a safe place to be at night. Still, on July 24, two women stayed until 8:50pm waiting for their work to be printed out. Printing was fascinating and rewarding in general for the students. Amanda had to start controlling the printing, but she was touched by the student enthusiasm.

> *Lupe: ¿Y el de usted no salió? Ha ver yo voy a sacar otra de estas, sacame otra, sí, por favor.*
> *Fernando: ¿Sí otra?¿A usted ya le salió señor?*
> *((Students are printing))*
>
> *Amanda: No more printing, Lupe no más, hay caramba*
> *Amanda: ((laugh)) I love you Lupe, Printing how many!*
>
> [Lupe: And yours did not go out? Let's see, I am going to get another one, get me another yes please.
> Fernando: Yes another? Yours already come out, Sir. ((Students are printing.))
>
> Amanda: no more printing, Lupe no more, ekke yipes!

Amanda: ((laugh)) I love you Lupe, Printing how many!] (July 24 Class)

"No more printing!" was a common phrase at the end of class. Amanda had to tell

students to stop. Students working in the lab frequently waited until Amanda called

several times that class was over before they shut down the computers and started

gathering their belongings.

Catherine's students demonstrated similar engagement in the computer activities

and projects. Strong student engagement was apparent as early as July 9, the third week

of the session. Learner engagement took on remarkable proportions as students got into

their projects. By mid July, students in the intermediate class were so intensely involved

in their projects that disengaging them from their work became a challenge, a delightful

one nonetheless. Mid-semester some students even had the nerve to start working on their

projects one day while another teacher was lecturing. As the students got more involved,

they got bolder. On July 24, I recorded the following events.

> Catherine asked everyone to come to the tables. The students did not want to stop
> working on their projects. Sarai's baby was crying, but she kept working.
> Catherine called again. Hunched over the computer and typing with a look of
> deep concentration on her face, Miriam said, "Estoy casi terminando." [I am
> almost finished]. Lillia continued working until Catherine called for the third
> time. Catherine talked to me a bit. After a while, the baby fell asleep. Finally, the
> students came to the table. When the students were at the tables Catherine
> scaffolded their thinking about the newspaper layout by asking a number of
> important questions such as What do we need to add? Where will the title go?
> Alicia turned to me in the middle of the discussion, head down and looking to the
> side, she whispered, "¿Tengo que quedarme aquí o puedo ir a terminar mi
> trabajo? ¿Puedo regresar trabajar en mi artículo?" [Do I have to stay here or can I
> return to finish my work? Can I return to work on my article?]

Although Alicia later acknowledged the importance of Catherine's questions, she, like the other students, could not quite tear herself away from her project. Students seemed to be in a "state of flow;" they were "singing" (Catherine, Final Interview, p.12).

Each student had found a niche. Sarai was engaged in the planning of the newsletter. Her brow wrinkled in heavy concentration, she discussed the newsletter layout with her classmates in a serious tone and with great attention to her words. She also communicated her engagement non-verbally during class planning sessions, making thinking noises, nods, and sounds of recognition. Similarly, Alicia was engaged in the grammar and finding of main ideas in articles. Reflecting on the process, Alicia commented with satisfaction about perfecting the grammar in her article. She had worked extensively on the grammar of her GED article. In her final reflection, Alicia also said that finding the main idea of articles was the easiest part for her, and she found summarizing to be "interesting."

Meanwhile, one of the youngest in the group, Patricia, took on the role of "designer," teaching others on the computer and contributing significantly to the pictures and overall layout. Catherine recounted, "She also puts art in. She also just does things on the computer which to me (pause), I think it is like singing" (Final Interview, p.12). Likewise, Lillia became engaged in the writing process. She produced three articles while helping others to edit theirs. She said the summer "hacido la mejor que he tenido" [had been the best she ever had] and explained that she was "un poco más metida en el estudio" [a little more involved in studying] (Final Interview, p.8). Most surprisingly, Miriam, who had been so timid and compliant earlier in the summer, practically led a

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rebellion. On both July 23 and 24, she was the last one to pull herself away from the project and only after repeated pleading from Catherine.

Miriam was strongly intent on finishing her articles. She had taken her work home several times. When she fell ill in the second to last week of the summer session, it was a great disappointment to her not to be able to come to class. Before letting me start her final interview, Miriam apologetically explained in detail how sick she had been and repeated twice how sad she was to have missed class. Catherine captured the feelings in these last weeks as she reflected in her final interview, "I think they were really enjoying. And I think they knew they were enjoying and I think they felt really important doing something and publishing it" (p.16).

Fun

Related to student engagement was the amount of fun students were having with the class, the English language, and their group work. This was most apparent in Amanda's beginning class where there was a considerable amount of playfulness. The playfulness reflected a level of comfort learners had in the class, with their teacher, and with the English language. Students and teacher joked frequently. They had several inside jokes that were repeated almost daily. They joked through sticky topics like who had children and who was single. They also laughed their way through major problems. Students were playful in their groups as well. They joked with one another about the names for their groups: the "Warriors," "los relax" [The "relax"] and called each other crude but endearing nicknames. As Fernando recalled, "Trabajando en grupos es más divertido" [Working in groups is more fun]. In and outside of groups, students were

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playful with the English language. They could often be heard practicing English

spontaneously without request, sometimes repeating words for the fun of it, or imitating

the teacher. In the following excerpts, Lupe and two other female students are playfully

imitating the teacher.

> Lupe: Good. Good teacher, very good teacher ((laughing)). (Class Transcript, July 2)

> Female Student One: See you Wednesday, *"So" los veo el miércoles*
> Female Student Two: Please sing the book, Por favor firme el libro
> ((The female students are practicing and translating phrases the teacher was in the habit of repeating at the end of each night)) (Class Transcript, August 6).

At each class session, students cheerfully called out greetings and routine phrases in

English, "Hi Teacher," "Good class, teacher," "Bye, Bye, Teacher." Sparkling eyes, loud

voices, and wide participation suggested that students were enjoying the English

language. The fun students were having contributed to their engagement in class

activities. Their engagement contributed to their motivation.

> *Por lo regular nosotros hemos trabajado bien. No nos hemos desanimado.*

> [In general we worked well. We did not lose motivation. (Final Interview p.5, Fernando)]

Instrumental, Resultative, Intrinsic, and Integrative Motivation

Study data suggest learner motivation was fairly constant throughout the summer.

Student participants in both classes began the session with strong "instrumental

motivations," or practical purposes, for learning English. Participants in the intermediate

class already had "resultative motivation" where prior success and positive experiences

learning English in the program contributed to their desire to continue to learning (Ellis,

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1994). During the study, participants in both classes demonstrated and expressed "intrinsic motivation" for learning English and for learning about the project theme. In other words, they had a natural interest and curiosity in the topics and enjoyed the English language (Crookes & Schmidt, 1989). Participants in the intermediate class also demonstrated and expressed "integrative motivation" for learning English, a desire to identify with the American culture and positive attitudes toward the learning environment (Gardner, 1985). At the end of the session, students in both classes reported strong motivation to continue studying English, working on projects, and attending the CBET program.

The participants had important instrumental or external motivation for learning English: getting better jobs, helping their children or other family members, and furthering their education. During a group work activity in early July, students in Amanda's beginning class discussed their reasons for studying English. One male student, Mario, summarized for his group. He said they wanted to learn English in order to get better jobs and better futures. They also wanted to learn English for their children. One woman said, "A mi sí me gustaria hablar inglés por mis hijos y por mí" [For me yes, I would like to learn English for my kids and for me] (Class Transcript, July 2). Another team speaker summarized, "Nosotros necesitamos saber más inglés para la hora de ir a buscar un trabajo y también para ayudar a los demás" [We need to know more English for the time when we go to search for work and also to help everyone else]. Later Amanda asked the students what problems they had helping their children in school. A male student blurted out, "English. Stuck, stuck." "Tenemos que saber inglés" [we must know English], Martin explained. These practical or instrumental motivations for

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studying English were stronger than other instrumental motivations such as getting good grades or earning money because they required real English language learning. The student participants truly wanted to learn. In one telling conversation on July 2nd, students talked among themselves about the uselessness of copying. Copying as a form of cheating, no longer served them.

> *Male student: Ahora nosotros estamos viendo otra realidad por que nosotros estamos viendo la realidad que de nada nos sirve copiar. La responsibilidad es diferente aprender y queremos algo serio para nosotros.*

> Male student: Now we are living another reality because we are living the reality that copying serves us in no way. The responsibility is different [for] learning and we want something serious for ourselves.

Indeed many of the student participants seemed determined to get this "something serious." Learning English was linked to their futures and the responsibility of helping their children. Lupe in particular was strongly motivated by the six grandchildren she took care of.

> *Lupe: Porque es lo que necesita uno para sus hijos saber inglés, saber como estar preparando para una educación para ellos. Porque a veces le preguntan a uno, y uno no sabe. Bueno yo de mi parte no les puedo responder todavía.*

> [Lupe: Because one needs to know English for their kids, to know how to prepare an education for them. Because sometimes they ask you and you don't know. Well for my part I can not answer them yet.] (Class Transcript, July 2)

Lupe, who at age 67 gained custody of two grandchildren and was caretaker of four others in California, exemplifies the sometimes desperate need of the participants to learn English. For many of the students, who also had no high school degree, learning English was one of few ways out of the fields (where they worked picking produce). English was a possible ticket to a better future.

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While Catherine's intermediate students did not seem to be in such dire situations, they too began as a highly motivated group. Student participants had some "resultative" motivation for studying English, good experiences that encouraged them to persist. In her final interview, Lillia suggested that students were motivated in the intermediate class because they had been studying for some time and knew more. Because of their prior experience, they were more focused and eager to continue.

> *Lillia: La gente, y la gente que está aquí ya entiende más, bueno tiene un poquito más de estudio, así que están más interesados en el estudio. Y ...*
> *R: Están más interesados?*
> *Lillia: Sí ellos ponen mucho como empeño.*
> *R: aha*
> *Lillia: y sí*
> *R: ¿Son más motivados?*
> *Lillia: aha, más motivados, porque no están empezando, ya tienen tiempo en esto, están interesados, están ya enfocado en esto*
> *R: ¿Y porque están tan interesados?*
> *Lillia: Um, porque yo creo que la clase está interesada. Porque ya pasaron desde el principio. Ya están más adentro y ya les interesa más seguir y seguir, seguir*

> Lillia: already the people that are here already understand more, well they have a little more studies, so they are more interested. And…
> R: They are more interested?
> Lillia: Yes, they put alot of like effort
> R: aha
> Lillia: and yes
> R: Are they more motivated?
> Lillia: [aha] more motivated, because they are not starting, and they already have some time on this, they are interested. They are already focused on it.
> R: And why are they so interested?
> Lucila: Um I think because the class is interesting, because they already made it past the beginning.They are already more inside and already it interests them more to continue, continue, and continue (Lillia, Final Interview, p.8).

Students were also intrinsically motivated. Their curiousity had already been peaked and they had positive feelings about the learning environment. The classroom conditions were conducive to learning and probably contributed to student enjoyment.

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The intermediate class took place during the day and was housed in a state-of-an-art computer lab with new furnishings and plenty of supplies. More importantly, the students were comfortable with and enjoyed working with their teacher, Catherine. Catherine's class was small and several of the students had already worked with her. She "custom-designed" lessons for students based on their levels and interests: created interesting multi-media lessons, brought in readings that were relevant to students' lives, was warm and friendly, and gave students individual attention. These class conditions and the prior experience of students in the intermediate class contributed to learner motivation both before and during the study.

Sustained Motivation

With the exception of two individuals, there was little evidence of waning motivation in either class during the summer session. Student motivation to learn was demonstrated among other things through attendance, on task behavior, and the initiation of tasks and homework.

Student participants attended class fairly regularly despite difficult work schedules. In the evening program, tardiness and absences are common, but attendance was better during the study summer session than in Amanda's previous class session and in the session that followed. Despite the fact that there were no attendance rules or tardy penalties, many of the summer participants took the responsibility of coming to class very seriously. Aricela said, "no me gusta faltar. Nunca dejo lo que empiezo." [I do not like to miss class. I never quit what I start] (Class Transcript, July 24). Similarly, another student participant, Bertha, talked about how she liked to get out of work early so that she could

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come to practice on the computers in class. Although student work schedules often gave them little choice but to be late, participants like Bertha and Aricela had the desire to be on time and to attend class.

In Catherine's class, there were few absences overall among the seven participants. Patricia and Miriam were frequently early and at work at the computers when the teacher arrived. Sarai came on foot, her infant in one arm and a high chair in the other. The young mom stayed the entire time multi-tasking as her baby cried, ate, cooed and napped. Alicia and Lillia came everyday and stayed right up until they had to leave for work. Monica started the session a bit late but attended faithfully in the last month. The women were committed to the class. Catherine explained, "I know them and we are pretty connected. They're connected with each other and we're - I'm connected with them" (Final Interview, p.3). The students looked out for each other and Catherine looked out for the students. When Miriam was absent for a week, Catherine was concerned. It turned out Miriam had been very sick. Although Miriam had a good excuse, she was apologetic about missing class.

In both classes, students initiated homework. In the beginning class, students would often study at home vocabulary they had reviewed in class. When Amanda taught vocabulary words and computer terms, students wrote the words in their books. Amanda explained, "and this class was especially studious so they go home and practice" (Final Interview, p.14). In the intermediate class, several students voluntarily brought work home to complete, and once the newsletters were underway, they took home their articles to edit and expand. They requested help from English speaking family members as well.

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Miriam explained how she brought her homework home and asked her daughter to help her with the computer and English vocabulary.

> *Miriam: Entonces ((pause)) cuando llegué a mi casa: y le dije a mis hijos tengo que hacer mi tarea.*
> *R: hm*
> *Miriam: (…) Tu sabes ya como prender la computadora. Yo sí (…). Y ella la pone ((pause)) y digo yo voy a sacar todo el informe ((pause)) y tu me ayudas ((pause)) a acomodar las palabras que yo no: que yo no sé*
>
> [Miriam: So ((pause)) when I arrive at my house and I tell my [kids] I must do my homework
> R: hm
> Miriam: (…) You know already how to turn on the computer. Me yes (…) and then she puts it on ((pause)) and I tell her, I am going to get the whole report (pause)) and you help me ((pause)) accommodate the words that I don't know

Although there were no grades or formal homework assignments, participants like Miriam made a habit of taking work home.

In addition, Catherine's students initiated different tasks during class. The computer generated calendar is one example. They had been making one each month. One day in late June, a student told Catherine she needed to make her monthly calendar. Catherine picked up on this strong interest in the calendar, which was one thing they had been doing in publisher, and it eventually led to the idea of the newsletter.

Students in Amanda's class demonstrated a similar degree of motivation, but in different ways. One sign of student motivation was that Amanda's beginning students could frequently be heard initiating the practice of English vocabulary and pronunciation and asking others for help with English and computer tasks. A number of Amanda's students seemed to be enjoying the sounds of English as they spontaneously and playfully called out English phrases. Like Catherine's students, they exhibited an intrinsic interest in learning and practicing the English language. It is also clear that Amanda's students

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had a strong interest in learning about computers. They expressed this interest in the course evaluations and final interviews. It was apparent during class observations as well.

On July 30, four weeks after students had learned how to search, copy, paste, and print images, students "had a printing frenzy" (Amanda, Final Interview, p.9). The teacher had been called into the office just before her class. This did not stop the students, however. They filed into the lab and began working. The printer was churning out images nonstop. The students were finding images for their children: Mickey Mouse, Donald duck, horses, etc. They were printing them out, one, two copies. From the sounds of the class, one might have guessed that they were having a party.

While the majority of the participants did not have an opportunity to practice computers outside of class, their motivation to learn English extended beyond classroom learning. A number of students reported studying new words and also practicing with their children outside of class. Miriam in the intermediate class talked about practicing with her children.

> Miriam: In my home I: I see tivi: in English. I liki di programs in English.
> R: Great.
> Miriam: And my: my son? and my dawter. ((pause)) Someti:mes they speake English wemi [with me] (final Interview, p.1)

Other students sought practice in the English speaking community at large. They practiced when they went to the store or when someone asked for directions in their neighborhood. In class, student participants discussed these English language events and efforts with pride. They appeared to have some *integrative motivation*, a "sincere and personal interest in the people and culture represented by the other language group" (Lambert, 1974, p.98).

The student participants appeared motivated even when unsupervised or self-regulated. The majority of recorded teamwork was on task. Catherine's students frequently volunteered to participate and tried hard to follow along. Despite limited English abilities, Amanda's students also participated widely and voluntarily in discussions. Students like Fernando in Amanda's class put real effort into understanding. When I asked Fernando if it was difficult to understand Amanda, he replied:

> Fernando: a veces le entiendo, la mayoría, casi le entiendo como un setenta por ciento porque ella trata de explicarnos, y así le entiendo más, como un setenta por ciento. Y a mí se me hace bien, porque cuando habla y pongo más atención porque sé que si no, no le voy a entender lo que está diciendo, y también por eso me fijo mucho y lo que no sé si le pregunto. Si no sé una palabra, le digo. "Who is the eat?Who is the cook?" Y Ella me dice.

> [Fernando: sometimes I understand, most of the time, I understand almost about 70% because she tries to explain to us, and like this I understand more, like a 70% percent. And for me it is good because when she speaks and I pay more attention because if not, I am not going to understand what she is saying, and also, for this reason, I look a lot and what I don't know I ask about. If I don't know a word, I tell her, "Who is the eat?, who is the cook?" and she tells me]. (Final Interview, p.2)

In addition to their strong motivation to learn English and computers, students developed a desire to work on their projects. When I asked Lillia how she felt working on her project in the beginning, she said she felt frustrated at first because she did not know if she could do it, but after working for awhile she felt good. "Ya me siento interesada de hacerlo" [I already feel interested in doing it], she said (Final Interview, p. 6). Participant motivation was sustained throughout the study, and it peaked towards the end of the projects. This was most evident in final student interviews, observations in the last couple of weeks, and teacher reports. When I asked the teacher Amanda about student motivation at the end of the session, she replied:

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Oh, it's unbelievable! It's off the charts! It's just incredible! They are so jazzed! ((Smiling)) (p.18)

In her final interview, Lupe reiterated the important instrumental motivations for learning English. She also communicated an intrinsic motivation for learning English because she had already had some success. On a practical level, Lupe needed English for her children:

> *Lupe: Y ya le digo a Carlitos, yo tengo que estudiar más ahorita. Porque el otro ya va entrar a segundo.*

> [Lupe: And I already told my little Carlos, I have to study more now. Because the other one is already going to enter into second grade.].

Lupe also needed English for basic health services. She felt she had learned a lot. She was enjoying her success as a student and was interested in learning more.

> *Lupe: Sí, sí aprendí más aquí. Hora sí yo ya no me quiero salir de aquí porque yo quiero aprender más, por que a mi me gusta mucho estudiar. Es algo muy importante. Así yo ya oigo cosas y yo ya sé que están diciendo. Ya no estoy tan…*
> *R: ¿Entiende mejor el inglés?*
> *Lupe: huh huh! "yes" ya entiendo más o menos que me están diciéndo. Ahora que yo estuve en un internado (hospital), yo ya les decía lo que quería a los doctores y a las enfermeras, palabras que yo ya podía ((laugh))*

> [Lupe: Yes, yes, I learned more here. Now, yes I already don't want to leave from here because I want to learn more, because I really like to study. It is something that is very important. So I already hear things and I already know what they are saying. I'm no longer so…
> R: Do you understand English better?
> Lupe: huh huh! "Yes" I already understand more or less what they are saying. Recently, I was in the hospital, I was already able to tell the doctors and the nurses what I wanted from them, words that I already could ((laugh))] (Final Interview, p.3)

Other students in Amanda's class expressed similar interest in learning more English and computers. In the final follow up interview (post project completion), three students expressed a desire to continue studying English using the same method. Antonio, who had some trouble learning and low confidence in his skills, was still motivated to

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learn more computer skills. He stopped me short from ending our long interview in order to tell me about a computer he might be getting from the school where he was a janitor. He said he was hoping to get a computer so that he could learn more. He wanted to use his computer skills to get a better job like one in a hotel. Fernando also said he wanted to work more with Amanda because she asked him plenty of English language questions. He said he got more English language practice with her than he did in his other grammar based class. Fernando like Lupe enjoyed the practice he got with English during the session and he wanted more. Antonio did not enjoy himself as much, but he said he still wanted to continue learning about computers.

Likewise, the seven student participants in Catherine's intermediate class seemed determined to study more English and computers. All three of the student participants interviewed mentioned that they wanted to continue studying. Lillia said the students wanted to continue studying, and she emphasized several times that she wanted to continue:

Lillia: Les interesa más seguir, seguir, y seguir

[Lillia: They are interested in continuing, continuing, continuing more]

Lillia: Yo pienso que debe uno seguir y seguir estudiando.

[Lillia: I think that one should continue continue studying.]

Lillia: seguir, y seguir para seguir aprendido ((laughing))

[Lillia: continue and continue in order to continue learning ((laughing))] (p.8)

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Similarly, Miriam emphasized her desire to continue learning English. "but inglés" she said, "Yo quiero aprender eso" [But English, I want to learn this] (Final Interview, p.4). Miriam said she wanted to learn English in order to be able to communicate with everyone including her family. Like the other students, Miriam's motivation to learn English was a mixture of need, desire, and interest.

Summary of Motivation

Overall student participants expressed a combination of integrative, intrinsic, and instrumental motivations for learning English and computers, and for continuing with their studies in general. The instrumental motivation was present at the beginning of the study and Catherine's students already seemed to have an intrinsic motivation for learning English and computers. Learners exhibited additional types of motivation during the study which may have emerged or grown further with the learning experience. Intermediate participants expressed integrative motivation for learning English and beginning students demonstrated intrinsic motivation for learning English. Despite some initial frustrations, learner motivations did not appear to drop in anyway during the session. In both classes, participants displayed motivation by attending class fairly regularly, working hard to participate, and initiating in class tasks and home work. Teacher and student reports as well as class observations all suggest that participant motivation increased during the study and peaked towards the end of the projects.

Independence, Pride, and Ownership

Learner independence was fostered during the study. Before the summer session, student participants were not accustomed to working independently in class. Rose, the coordinator, said, "In their culture, students are not encouraged to be self-learners" (Personal communication, August 7). This was especially true in Amanda's beginning class. "They weren't doing anything individual. Everything was teacher directed," (Amanda, Final Interview, p.5). Part of the student dependence upon the teacher was related to their academic experience in Mexico, but part of it was also their experience in the previous class. Amanda described the previous teacher's class:

> It was very structured. It was totally teacher directed. Without the teacher they were dysfunctional, totally absolutely dysfunctional. (Final Interview, p. 6)

In my initial class observations, I was struck by the lack of independent student behavior. In the second week, I noted:

> A number of students sat in front of the computers which had not been turned on. They were just sitting there waiting for their teacher, not talking and not touching the computers
>
> Some don't know how to start the typing program. Lupe is trying to use it without her head phones and she doesn't understand why it won't work. I find her headphones and plug them in. Lupe puts them on. When I come back she says "no oigo nada" (I don't hear anything). She hasn't touched any of the buttons on the program, so nothing was initiated (Field Notes, July 3).

I was surprised that none of the students tried to turn on the computer or to ask for help in doing so. At the time, I thought it may have been due partly to their lack of familiarity with the computers, but Amanda suggested that the dependence upon the teacher occurred across activities. In her final interview, Amanda describes the first few sessions:

> In those days, we didn't have any independence. Everything was still teacher directed. And I would walk into the room and they would just be sitting there

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waiting for the teacher. Nobody dared do anything without the teacher (Final Interview, p.6).

The lack of student self-sufficiency changed after about six weeks in Amanda's beginning class. Students became more independent in the computer lab as well as in the classroom. By July 24, students were turning on the computers and working on their own even before the teacher arrived to class. At the end of July**,** lab activity took on a *carnivalesque* quality (Bakhtin, 1984). Notions of teacher authority were challenged and students explored new roles on their own. One salient example was the "printing frenzy" on July 30 (Amanda, Final Interview, p.9). Amazed, I recorded this event in detail.

> On July 30, the teacher was called to the office for an emergency. She was more than 30 minutes late for class. The students started up the computers on their own and began working loudly in teams and pairs. They got onto Google and started searching for all sorts of images. Helping each other along, students cut and pasted their images in Microsoft word. Then "they had a printing spree" (Amanda, July 30). The printer was churning out images non-stop. The students were finishing up from the previous week's "shopping theme" getting images for that and what ever else they could find. They were printing images for their kids: Mickey Mouse, Donald duck, horses, elephants, and others. They were showing each other their printouts and making copies for one another. The students did not stop when I arrived nor did they stop when the teacher arrived. There were none of the usual greetings. Amanda and I stood in the back of the class for a moment watching with amazement. It seemed that they had dropped all notions of teacher as authority. The students continued until the teacher called several times for them to stop. After class, Amanda declared enthusiastically, "At six weeks they became independent!" (Field Notes, July 30).

The new independent roles students were exploring were only partly due to the facility they had gained on the computers. They were also becoming more independent in the classroom. Teamwork organization, the project being underway, and the thematic worksheets Amanda had developed played a role in the new independence. Amanda had been scaffolding student problem solving. Team leaders were assimilating new students into their groups and directing student work, and team members were helping one

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another. Also, most students were familiar with the project goals. They were able to pick up on lesson from the previous classes and had become accustomed to a class routine. Part of the routine was for students to work on the task-based worksheets Amanda had developed. The worksheets had vocabulary, which was reviewed in class, and step by step directions for the task of the day (Appendixes R and S). Student participants reported that the step by step worksheets and their team organization made the class run more smoothly. They called on the teacher less and were able to complete more work. Amanda also recalled that towards the end, they were able to work in teams without the worksheets. Student groups had learned to organize themselves, and they were able to complete the book cover and to collate the books without step by step instructions. Amanda was passionate about the students' new independence. "They are totally empowered! And they were not empowered before!" she said (Final Interview, p.10).

Student participants in both classes experienced pride and ownership. In the intermediate class, students took pride in accomplishments such as completing the creation of a calendar online, having an article placed on the first page of the newsletter, and seeing the newsletter completed and in color print. I asked Lillia how she would feel when the newsletter was finished. She replied:

> *Lillia: no sé si va ser una [noticia]⁸ muy buena, pero para mi va hacer una muy buena porque yo lo hice,*
> *R: mmm*
> *Lillia: porque aprendí mucho, y me siento muy orgullosa ((laughing))*
> *R: mmm*
> *Lillia: mmm, aunque no sea muy buena yo voy a sentir que sí fue muy buena ((laughing))*

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⁸ Lillia and other students used the word "noticia" which means "news" to refer to the newsletter.

Lillia: I don't know if it is going to be a very good [newsletter], but for me it will be a good one because I made it

R: mmm

Lillia: Because I learnd a lot and I feel very proud ((laughing))

R: mmm

Lillia: mmm, Even though it may not be very good, I am going to feel that it was very good ((laughing)) (Final Interview, p.6)

Student participants in the intermediate class had ownership of the newsletter. It was clearly a student creation. Learners reported in their interviews, formative assessments, and final reflections that they had made decisions about the newsletter based on what they thought and what they liked. The articles were "really student generated writing" (Catherine, Final Interview, p.7). Catherine said, "They had a lot of ownership of it." "I didn't do it. My hands were pretty off it" (Final Interview, p.10). Catherine had scaffolded the process enabling the students to write and publish the newsletter themselves. Her "hands off" role made the students all the more proud.

I think I coached, I chewed and this and that but I don't think I – It's not my newsletter. I did not write that newsletter. And that's what I'm the happiest about because I can say to my students, I feel really really proud of that. And I don't think they would have loved it as much. (Final Teacher Interview, p.18).

Catherine's students were filled with emotion when they saw their final newsletter in print. The six women sat speechless as they received the color copies of their newsletter. They stared at the newsletter, flipping through slowly and carefully, not saying a word for a long period of time. Finally, the youngest student Patricia looked up and asked, "How did you do that!?" She wanted to know how it was printed and made into a single newsletter rather than the four original pages they had produced. Patricia looked on with interest as I explained the process. After some time, I asked how they felt. One woman replied, "Happy." The others agreed. The students talked about what they would do with

the extra copies and who they would show the newsletters to. They said they wanted to

share it with their families and friends as well as with other students and staff in the

program.

Student participants in the beginning class also experienced pride. They

demonstrated pride as they showed their children the images they had found, copied, and

printed each night. They talked about how proud they were to be able to show their

children what they had done and learned. Finally, they were proud to be able to complete

the books. In his final interview, Fernando said he was happy about the books because

they were almost done, and he was happy because the books contained images that his

children loved.

> *R: Van a terminar el libro en la semana que viene. Y ¿Cómo se siente usted ahora sobre el proyecto, en el libro?*
> *Fernando: Yo me siento muy contento porque ya casí lo terminé y le puse muchas figuras de caricaturas para los niños. Ellos en cuanto lo miran, ya lo quieren agarrar.*
> *R: !De verdad!*
> *Fernando: Y me faltan dos o tres días. Yo, este, como mis niños son de" two years" y "four years" ellos le gustan de cartoons y yo por eso le puse cartoons para que les gusten a ellos. De "cartoon for the like of the children como "Spider man, Hult or Batman."*

> R: You are going to finísh the book next week. How do you feel now about the Project, the book?
> Fernando: I feel very happy because it is almost done and I put many cartoons for the kids. As soon as they see it, they just want to grab it.
> R: Really!
> Fernando: And I just need two or three days. Me, like, since my kids are "two" and "four years" old they like "cartoons" and for this reason I put cartoons so that it pleases them "for the like of the children" like "Spider man, Hult or Batman." (Final Interview p.4)

In addition, student participants exhibited great pride when they received their

completed books. On the last day, Amanda called out student names and presented each

student with their bound book. Students clapped enthusiastically for one another. As one student received his book, he called out "Gracias a mis compañeros" [Thank you to my classmates]. I took out a digital camera I had borrowed from the office to see if I could get it to work. A male student quickly gathered his family around him and posed for a picture. Other students began posing too as they came to get their books. I informed the students that the camera was not working, but they continued posing and accepting the books in this formal way as others clapped. Afterwards, parents sat and shared their books with their children. The room was unusually noisy and filled with lively discussion. One child said, "Mom, did you do that?" Another said, "!Cómo se hizó esto!," [How did you do that!?] Her mother smiled and proudly explained. Amanda invited everyone to the cafeteria for the potluck party. One male student, Javier, made his way slowly to the cafeteria reading his book as he walked. Students had prepared elaborate dishes (Mole, macaroni salad, cake, etc). Someone brought salsa music and, after the meal, everyone danced. For the students, the book presentation was an important event and time for celebration.

Teamwork, Higher Order Thinking, Strategy, and Content Development

This section discusses the student learning experience and skill development in the areas of teamwork, higher order thinking skills, and strategic and content knowledge.

Teamwork Skills

Students in the beginning class developed remarkable teamworking skills. The classroom atmosphere was transformed from one of chaos to organized community. On

July 9, students organized themselves in groups according to their interests and elected group leaders. During subsequent sessions, team members took turns being the speaker, writer, editor, and time keeper. Team leaders also took responsibility for assimilating new students into their groups. In groups, the students helped each other with tasks on the computer. They assisted one another with English spelling, pronunciation, and writing. They discussed their problems, shared ideas and ambitions, exchanged information, brainstormed topics, problem solved, gave advice to one another, and took turns explaining things. Together the team members puzzled over and figured out directions from the teacher. They completed worksheets collaboratively, piecing together their knowledge of English to produce answers. Class transcripts, observations and student reports also indicate that team members practiced English together and taught each other the English they knew. All of the student participants expressed positive attitudes towards teamwork activities in their final interviews and reflections. Several students reported that working in groups made them feel more confident.

It took some time for the students to develop comfort with teamwork and to develop teamwork routines. On July 16, Amanda wrote in her electronic journal

> We had 3 new people and 3 people who missed last class and did n't have a group. So we discussed what to do. they got into groups and we had at least 6 people who were just sitting there so it took some questions for them to realize that they couldn't just let knew people sit there, or join just any group.

> Got into groups, and stopped several times to handle incoming students. It took 20 minutes to get into groups. we talked about why it took so long and what we would do differently tomorrow nite to get into groups faster and to handle new people. they thought it would be faster tomorrow because they had practiced tonite and they thought the chair person of each group should meet new people, ask questions so they would know if the person fit in their group or not.

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However, little by little, a system got into place. Teams elected leaders and shared

different responsibilities in the groups. Fernando explains:

> *Fernando: a nosotros nos dijeron que teníamos que tener un jefe. Que deberíamos de tener a alguien que fuera el chair person y que teníamos que tener a alguien que tomara el tiempo y alguien que escribiera. Y así hemos trabajado. Yo he sido el chair person yo los he orientado más o menos.*

> [Fernando: They told us that we had to have a boss. That we should have some one be the "chairperson" and that we we had to have some one who will take the time and some one who would write. And that is how we had worked. I had been the "chairperson." I oriented them more or less]. (Final Interview, p.5)

New students, or students who had been absent or late, were assimilated into teams. Team

members updated them on what was being done and assisted them with new skills.

Several natural team leaders emerged. Fernando was one. On July 9, he took

responsibility for organizing a group, assimilating a new student named Lorena, and

translating English instructions.

> *Fernando: Podemos contester las preguntas ¿cómo estás? How many people do you have?*
> *Students: ((Everybody is reading at the same time))*
> *Javier: Who is going to write today?*
> *Fernando: Pues yo no sé escribir muy bien.*
> *Female student: pues yo sé escribir una que otra palabra, pero no "sentences"*
> *Fernando: Aquí dice who is the writer for today, mañana va a ser otro.*
> *Amanda: You can keep the speaker for a couple of times.*
> *Fernando: ¿Quién va a ser "el speaker?" ((silence))*
> *Fernando: ¿ y su nombre?*
> *Lorena: Lorena Vega (aliases inserted)*
> *Fernando: Y usted?*
> *Javier: Jorge Sanchez*
> *Fernando: Y usted?*
> *Antonio: Antonio*
> *Fernando: Aquí dice que ?Qué temos en comun en la lista?*
> *Amanda: Stop! Stop! I have some handouts, who wants to be the chairperson?*
> *Fernando: ¿Quién va hacer el representante, el "chairperson"?*

> Fernando: We can answer the question how are you. How many people do you have?

Students: ((everybody is reading at the same time))
Javier: Who is going to write today?
Fernando: Well, I don't know to write very well.
Female Student: Well, I know how to write a word or two but not "sentencias"
Fernando: It says here "who is the writer for today," tomorrow it is going to be another.
Amanda: you can keep the speaker for a couple of times.
Fernando: Who is going to be the" speaker"? ((silence))
Fernando: And your name?
Lorena: Lorena Vega
Fernando: and Yours?
Javier: Javier Garcia
Fernando: And yours?
Antonio: Antonio
Fernando: It says here what do we have in common in the list?
Amanda: Stop! Stop! I have some handouts, who wants to be the chairperson?
Fernando: Who is going to be the representative, the "chairperson"?

July 24 was another model class for group work and English language use. On this day,

Amanda gave some directions and Aricela, one of the team leaders, translated the

directions for her group. With Aricela organizing, Lilia, Lupe, and two other students

collaborated on the "shopping" worksheet. This worksheet was designed to help the

students learn about math they could teach their children in Kindergarten and elementary

school. Aricela asked one person to write and one person to be the speaker (the person

who would later share the information with the class). The group discussed the task, each

taking part. Aricela read some of the questions in English and Spanish. Amanda stepped

in to ask, "do you have your coupons?" Aricela responded in English, "yes, we have."

One of the students began to write the answers. Lupe asked the group how to spell a word

in English, "por que en inglés no más le quitas la o al ultimo. Verdad?" [Because in

English you just need to drop the "o", right?] Aricela answered in English, "yes." The

students moved onto the next question. Lupe asked a question in English, "How much

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money is in the the coupons?" and Lillia answered in English, "What?" The students

consulted each other on their answers. When they had a question, Lupe called Amanda

over. The students continued working. Then, Aricela helped the other group members

with the word "save" in English:

> *Por eso te digo save, significa ahorrar, salvar, preservar, conserver, proteger,*
> *guardar, significa muchas cosas.*
>
> [For this reason, I tell you "save" means save (as in saving money), save (as in
> rescuing), preserve, conserve, protect, keep, it means many things.]

Afterwards, Lupe read the final question aloud and discussed her answer with Aricela.

They decided upon an answer and wrote it in English.

> *Lupe: ?Cómo puede enseñar estas matemáticas a sus hijos? ((she is reading a*
> *question))*
> *((students discuss at the same time))*
> *Lupe: Estas matemáticas sí las puedo enseñar a mis hijos en la tienda.*
> *Aricela: ?Cómo?*
> *Lupe: Sí estas matemáticas, sí las puedo enseñar a mis hijos en la tienda.*
> *Aricela: Cuando vamos de compras.*
> *Lupe: Porque allí miramos cuanto cuesta.*
> *Aricela: Cuando vamos de "shopping." Escríbelo en English.*
>
> [Lupe: How can you teach this math to your kids? ((she is reading a question))
> ((students discuss at the same time))
> Lupe: This math, yes I can teach it to my kids at the store.
> Aricela: How?
> Lupe: Yes, this math, yesI can teach to my kids in the store.
> Aricela: When we go shopping.
> Lupe: Because there we look at how much things cost.
> Aricela: When we go"shopping." Write it in "English"].

The transcript above illustrates a successful group work session. The group members

worked together. Antonia helped to organize everyone and each member participated.

Despite their beginning levels in English, they used a little English where they could and helped one another to understand English language vocabulary and to write and to spell in English. Group work like this helped students to learn.

During the final interviews, I asked students how it was for them to work in groups. They said it was a very good experience because they learned more and practiced more in groups. While working in groups they could help each other with English and other topics, give advice to one another, and explain things to each other. Students also said they liked having a leader who would give directions. In addition, group work helped students to learn English. As Fernando explained, they used English words for group organization and to discuss the projects.

> *Fernando: Aprendí en inglés a hacer grupos "for example my partners [partners], learn to talk thing of my children. Maybe help with their homework." ((Pause)) Es lo que aprendí.*

> [Fernando: I learned to do groups in English "for example my partners, learn to talk thing of my children. Maybe help with their homework." ((Pause)) That's what I learned. (Final Interview, p.1)

Class transcripts and learner reports also indicate that students frequently used their teams as a tool for English learning as they taught and asked questions of one another.They helped each other pronounce, spell, and write English language words. They discussed English language vocabulary, grammar, and how to look up words in the dictionary. Not only did lower level students learn from more advanced students, but more advanced students also learned as they were assisting others. When I asked Fernando if he had learned any English language writing, he said he had learned a little by helping his classmates:

Fernando: Este verano he estado aprendiendo poquito más de, como ayudando a los compañeros es como he aprendido más.

[Fernando: This summer I have learned a little more, helping classmates is how I learned more.]

Moreover, four students indicated in their final interviews that working in groups gave them more confidence. It made them feel good, more comfortable, and more capable of completing tasks and finishing their book project. Student participants in Amanda's class clearly liked working in teams. They repeatedly commented on their enjoyment of group work in formative assessments, reflections, final interviews, and final post project questions. Fernando summarizes the feeling well:

En la última semana, y desde que comenzó este projecto, los sentimientos han sido de compañerismo y ayuda entre nosotros.

[In the last week and from the beginning of this project the feelings have been ones of comradeship and collaboration among us] (Fernando, Final Post Project Questions, August 7)

This feeling of collaboration continued in the computer lab. Class observations, transcripts, and student reports all indicate that students frequently helped fellow team members and other students on the computers. The success of student teams in enabling learning and increasing learner confidence combined with overwhelmingly positive attitudes learners had towards teamwork all suggest that students developed effective teamworking skills. They learned to work together and to organize themselves.They developed the strategy of using team roles.They found ways of working together despite the transient nature of the class, and they figured out ways to use their teams as tools for English language learning.

The experience of Catherine's intermediate class was different from that of Amanda's beginning class in the area of teamwork. Catherine's class only had seven "core"students, students who attended on a regular basis. It made more sense to do pair work as well as to have smaller groups of three or four (Electronic Journal, July 6, Catherine). Catherine alternated these groups to give students variety (Final Interview p.16). However, the strategy of assigning student roles did not work for this class. Students sometimes elected a secretary to record what they were saying, but other than that they did not use team roles like those used in Amanda's class. Instead, they worked collaboratively with everyone on an equal footing. Together they discussed a variety of topics and themes; shared information and ideas; read, wrote, and spoke English; practiced pronouncing English language words; studied English language vocabulary; planned, evaluated, and summarized article content; worked on the computer; created collaborative documents; discussed the newsletter layout and design; and made decisions about the project. Student participants perceived their work as part of a group effort. When asked to reflect on their individual learning, they used "nosotros"or "we" and talked about what they had done together. The collaborative nature of student work was reflected in the newsletter where each article had at least two authors and everyone was listed equally in the credits. In her final reflection, Lillia described the steps for publishing a newsletter as a collaborative process[9]. She wrote (in exact words):

> *Desidimos que tipo de noticia queriamos acer como informacion y organizarlo, buscar buenas fotos que conecten. Primero discutimos en equipo aserca de que queriamos aser y agararlo mejor de cada quien.*

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9 The following excerpt was transcribed word for word.

[We decided what type of news [newsletter] we wanted to do like "informacion" and organizing it, search for good photographs that connect. First we discussed what we wanted to do in teams and to get it better each one] (Final Reflection).

The collaborative process was sometimes in English and sometimes in Spanish. Despite the fact that all of the student participants were native Spanish speakers, they did speak English during a good portion of group work, especially when they were working with an English language text. On July 8, two other Spanish speakers could be heard conducting a long English language conversation about language learning strategies.

Patricia: How can I, can more practice speaking English?
Sarai: ¿Cómo se dice? "How can I"
Patricia: I get more practice (reading) pra, pra pratic
Sarai: practice!
Patricia: Ah hah practice.
Sarai: How can I get more practice with? speak en English e (slow thick accent) e, talking
Patricia: Oh talking
Sarai: Talking with olther (other) people, talking
Sarai: with (helping other student write) talking with other people talking with other
Patricia: other people
Sarai: Talking with other people]

Over the next month, Catherine commented enthusiastically as she heard Patricia, Sarai, Lillia, and others working with each other in English.

On the whole, group work was a positive experience for the intermediate class. Student participants felt more confident working in groups because they gave each other support. In her final interview, Lillia explained that in groups the students felt "más confiados en hacer lo que estás haciendo" [more confident in doing what they were doing] (Final Interview, p.7). In response to the final post project interview question,

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"Now that you have finished the class and completed your project (publishing the newsletter), do you have any other comments about your learning experience in this class?" Lillia wrote (in exact words):

> *Si que los Proyectos son mejores cuando se asen en grupo y cuando es aserca de algo interesante. llo creo que una persona sola puede aser un buen prollecto pero si es en grupo puede tener diferentes puntos de vista y desidir cual es el mejor.*

> [Yes that the Projects are better when they are don in group and when it is avout something interesting. I believe that a person can du a good project alone but if it is in group there can be different points of view and deside whose is the best]. (Final Post-Project Questions, August 7)

The positive responses students had to group work and productive outcomes of the group work in Catherine's intermediate class indicate that students were implementing effective teamwork skills. Although the data suggest that most of the students had these teamwork skills prior to the study, they certainly had the opportunity to develop them further in their various collaborations.

Higher Order Thinking Skills

Data across sources show that the student participants in both classes developed higher order thinking skills. In Catherine's intermediate class, learners developed the higher order thinking skills of researching, summarizing, planning, organizing, and evaluating. They also developed writing process skills such as brainstorming and editing. In Amanda's beginning class, student participants developed their problem solving and organizing skills.

In the first few weeks, Catherine's student had noticeable difficulty in the areas of summarizing and brainstorming. The progression is clear from July 8 to July 24. On July

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8, Catherine asked Patricia to summarize the responses she had from other students in the class about strategies for learning to speak English. Patricia's response was to read each one of the other students' answers. When Catherine tried to scaffold a more general response, Patricia continued to list the individual responses. On July 9, Catherine asked students to work in groups to brainstorm ideas for their articles. The students did not understand the concept of brainstorming. Both groups of students latched onto one idea and began focusing on the details. Catherine tried to scaffold their brainstorming in English and I tried in Spanish. Feeling as if we had hit a wall, I recorded the following.

> C asked students to brainstorm topic ideas for the newsletter. The students had difficulty doing this. Rather than brainstorm different ideas they came up with one topic and starting listing the details. No one listed general categories just specifics. For example, one group chose to talk about their city and spent their time listing characteristics of their city. I tried to help them in Spanish to consider other ideas and to summarize their detailed list, but they kept returning to the details (Field Notes, p.22).

Subsequently, Catherine put more effort into scaffolding student brainstorming and summarizing. First, Catherine modeled brainstorming or "throwing out ideas" for the newsletter articles. Next, students worked together on the initial development of their articles. On their own, students still seemed to be jumping into the details of their articles before brainstorming ideas or having an overall plan. For example, Lillia and her partner were simultaneously exploring ideas for an article while writing the article. In the first few minutes of their brainstorming session, Lillia asked her partner why computers were important. Her partner told her to write her question down and that became the title of the article. After their work session, Catherine called the students to the tables to discuss their ideas. At first they were still sharing details. She helped them to paraphrase and focus

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their ideas. Towards the end of the discussion, Catherine noted some improvement in the

brainstorming process and reiterated the idea that these were just initial ideas and part of

the organizational process.

> Catherine: perfect, this isn't your article, this is kinda of your ideas, a little bit of
> an organizing, you're organizing your thoughts, well done, you're, you're all
> getting better, I don't know if you can see your progress, I hear it, and you're
> articulating your thought.

> Improvements in summarizing and indentification of main ideas were apparent in

later classes. On July 16, Catherine wrote:

> In the last 30 minutes I asked them in 3 groups of 3 to write another article. I gave
> a list of suggestions. They had 10 minutes to come up with a main idea and
> information. They did it!

On July 23, Catherine asked each student what their article was about. They answered

quickly and succinctly.

> You are writing about?
> Alicia: Computers
> Catherine: Would you say that is the main idea of the article you are writing?
> Female student: Yah
> Catherine: Yah, pretty much computers, right. And your article is about?
> Alicia: GED
> Catherine: GED. And your article is about?
> Miriam: The summer class. (Class Transcript p.9-10)

> In the area of higher order thinking, Catherine's students also developed

knowledge of how to organize their writing for a newsletter format. The process was new

to them and it took some time for students to understand. Initially, they were so focused

on their individual articles that it was hard for them to think about the overall layout and

thematical structure. On July 23, Catherine presented the idea of doing a mock up, a

layout draft using hard copies of the articles. She asked the students to think about topics

they might want to add, to consider what titles they might use, and to start planning the

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order and placement of articles. The students seemed baffled at first by these questions.

They sat in silence looking at Catherine. Catherine was a true facilitator. She let the

students know that she would not do the planning and organizing for the students. They

would have to do it themselves. In the following class sessions, Catherine repeatedly

scaffolded students on these tasks. Some of the students seemed to be improving in their

ability to summarize, but it was difficult for them to think about the overall organization

of the newsletter. On July 24, one student, Sarai, demonstrated her ability to summarize

the main idea of the articles. She named and classified the article topics into three

categories: Salinas, learning problems, and the CBET program. However, for the rest of

the class, students struggled to answer Catherine's questions about the layout and overall

organization of the newsletter. Catherine continued to scaffold the students by asking

questions and giving hints. Eventually, the students came up with some ideas for

arranging different parts of the newsletter.

> Alicia: We can move it.
> Catherine: We can move the picture. What else could we do? Only the picture?
> Sarai: Yah, (……………….)
> Catherine: Oh, and where could we move em?
> Alicia: The other page
> Catherine: Oh! ((laughing, laughing, clapping))

They learned that the format of the newsletter was flexible; the different parts could be

moved around.

> Catherine: So do we have to keep it like this or can we have the option to make changes?
> Sarai: There are many options.
> C: Okay. Okay. So if I put it here. Are we rigid, or can we change our minds after Miriam brings her article in? Can we – is it definite, or can we be flexible?
> Students: flexible

At the end of the discussion, Catherine checked the students "emotional temperature"

(Oxford, 1990). They looked serious and Miriam said it was very difficult.

> Catherine: Okay. Are you okay? What are you guys thinking? Are you okay?
> Everyone's serious. Why are you all serious? ((laughing)) Any thoughts? Can we
> do it? Do you think this was more difficult or easier than you expected?
> Female Student: (.....)
> Catherine: Oh, than you expected.
> Miriam: For me it's difficult ((chuckling)).

The students had another hands-on lesson about the newsletter organization on

July 31. This time they demonstrated more facility with the task of organizing the

newsletter. On this day, an unexpected event forced them into a difficult dilemma. Alicia

suddenly decided she wanted to put the calendar in the newsletter. The other students

agreed. For the teacher, this was a frightening development. The newsletter pages were

already jam packed. It was the last day of the second to last week, and they still needed to

send the newsletter out for the copying and printing. But this was the students' idea and

Catherine did not want to stop them. Instead Catherine posed the questions of where they

would put the calendar, how they would move the articles around to fit the calendar in,

and whether or not they would need to change the size and shape of the calendar. Thus,

the students began exploring answers.

Several students stood up and began looking over the mock up. As they were

doing this, they started to discuss how they would organize the articles by topic and

which ones should be first. They switched the article "Health Programs" with another

article on Salinas so that the Health article would be on page three next to another family

topic, "Helping your kids with learning." Meanwhile, another student, Patricia, worked

with Catherine to try to figure out how to make space in the newsletter. Finally, the group

decided that they would put the calendar in a vertical position on page 4 of the newsletter and reduce its width as well as the width of the neighboring article, "Strategies for Learning English" (Newsletter page 4 appears at the end of Appendix T). The level of problem solving on this day was impressive. On their own, the students were talking about the main ideas of the articles and where the articles should be located in relation to one another. The students puzzled over how to keep similar themes together while moving articles around to make room for the calendar. In sum, the last minute calendar provoked discussion of the layout and presented space issues that they all had to resolve. The experience was an opportunity for students to apply various organizational skills they had developed.

The developments Catherine's students made in regard to understanding the organization of a newsletter were forefront in their minds when they completed their final reflections. Several students mentioned learning about the organization of a newsletter. Lillia said:

> *Yo aprendí durante el proseso de la noticia como organisar un periódico estamos aprendiendo a organisar una buena información que sea un buen contenido.*
>
> [During the process of the news [newsletter], I learned how to organize a newspaper. We are learning to organize good information that will have a good content.]

Lillia articulated her understanding of the flexible layout as well. In response to the question, "How do you decide the layout of the newsletter?"Lillia wrote "I get many layout and I decide wich one is the better for my newsletter" (Final Reflection). She understood that there were many ways to organize a newsletter, and that it was important to select the most appropriate layout.

Students also talked about finding the main idea of articles and mentioned the importance of choosing a related picture. They said that making sure the picture related to the theme was part of the editing process. Additional class observations, transcripts, and student and teacher reports indicate that students developed an awareness of writing process skills of editing, evaluating, and planning. These skills are discussed in the section on Linguistic Gains, "Writing Development: Catherine's Class."

In the area of higher order thinking skills, students in Amanda's beginning class demonstrated some development of their problem solving and organizational skills. Amanda described this development in her final interview.

> And we have been doing some high level questioning, thinking skills. In the teacher led projects. They have really been asked to figure things on their own and they haven't really been given the answers. And I have been asking what questions and how questions, and what do we do next questions and here is a problem and how do we solve this? And we've got new people and what do you want to do? And what happens when a new person comes in and what do we want to do to handle it and what makes sense to you? So I said I asked them all kinds of questions of them. So they have a lot more cognitive skills than they did at the very beginning. You know looking at a worksheet they don't have to figure anything out.
> R: Problem solving skills would you say?
> Amanda: Off the chart problem solving skills!
>
> R: What about planning, would you say organizing the group?
> Amanda: They totally organized the group

Students in Amanda's class had plenty of practice problem solving. They engaged in a variety of problem solving tasks from the discussion of how to teach specific math topics to their children to the resolution of major classroom problems. On July 3, students addressed the question of how and what to teach their children in Kindergarten math. On July 9, they dealt with the constant influx of new students. Amanda brought students in on the problem solving of such class issues. She asked students what they wanted to do

about the interruptions. It took some time for students to understand; however, they

eventually found solutions. After numerous interruptions on July 10, Amanda posed the

problem to her students. They were confused at first, but eventually Fernando responded.

> Amanda: Stop! Hello! Do you want to stop every time a new person comes?
> Fernando: Yes
> Amanda: Do you want to do that?
> Fernando: No
> ((They do not understand what teacher is saying.))
>
> Students: ((They are lost, so they laugh))
> Amanda: Who wants to take care of new people? So what will you do?

> *Fernando: Los vamos a acomodar en nuestros grupos.*

[Fernando: Let's accommodate them in our groups] (Class Transcript, July 9).

For the rest of the session, "chairpeople," elected team leaders, in each group carried out

Fernando's plan.

In teams, the students got better at organizing themselves and their work. The

teams handled issues such as how to transition from the classroom to the lab and what to

do when Amanda was called away from the classroom. When I asked Amanda about how

it was to move from the classroom to the lab, she replied:

> It was difficult in the beginning. But now I just send them with their chair people
> and the chair people handle everything. And then we have several people who
> have become really good at the computer and they are not chair people and they
> automatically help the new people. Everyone helps, everyone helps. And the new
> people are automatically welcomed. And in fact this week we had new people and
> I had to handle something and the new people just went along with our class into
> the lab and I got there 10 minutes later and the new people were all on their
> computers, they were in the typing program. You know, the new people were all
> instructed by the other students (Final Interview, p.10).

The students had figured out what to do with new students and how to accomplish tasks

even in the teacher's absence. They were learning how to organize tasks by doing them in

steps. When I asked Amanda if her students had learned something about breaking the project down into smaller parts, she replied:

> Absolutely, at the beginning of our project and all of our worksheets there is a direction section after the vocabulary there's a task about what we want them to do and it is posed in the form of the question so they are asked to think about it and figure it out and work through it in their minds and then there are directions so that they can. It begins to scaffold them and help them realize what step they might take (Final Interview, p.16)

As students were following the steps for each task, they were aware that they were also learning how to put together a book. As one students explained, "Aprendimos como desarrollar el libro" [We learned how to develop the book] (Bertha, Final Interview, p.5).

Students in Amanda's class and Catherine's class developed different types of content knowledge during the session. Students in the beginning class reported and demonstrated some learning about the project theme: helping children with math in American schools. However, their actual book projects suggest more focus on computer and language development than on the content. In her final interview, Amanda confirmed that the focus was more on English and computer skills. She said the students did not learn how to create lessons for their children, but they did find different ways of connecting with and learning about the project theme. Although students in the intermediate class did not end up focusing on the same project theme, they reported and demonstrated some knowledge of the type of math their children would need and ways to help them. They also demonstrated individual collections of knowledge relating to the particular themes they chose for their newsletter project. The following section examines the development of content knowledge in each class starting with Amanda's beginning class.

Student participants in Amanda's class expressed and demonstrated understanding of the project theme and individual lesson foci. One memorable class for the students was July 24. On July 24, students worked in their teams on the theme of "shopping" which was connected to the California math standards for elementary school. As one student, Sonia, explained they needed to teach children in 1st through 5th grade about quantitities. Using coupons at Safeway (the supermarket) with their children was one way to do that. In their final interviews, several students recalled the "shopping" theme and articulated understanding of its purpose and relationship to the problem of helping their children in American schools. When I asked Lupe what kinds of things she had learned about helping her children, she replied:

> *Lupe: Sí sí hay ejemplos como los de los niños como los vamos a enseñar ((pause)) a las matemáticas y yo escribí que los fui a llevar a la tienda a comparar precios, eso es lo que aprendí, y el niño me dijo que tiene en el kinder; me dijo mama Lupe yo estoy en el Kinder gartden y me dijo a todo eso lo estamos estudiando ahorita. Por que el ya va a pasar a primero.*
> *R: Usted sabe que puede enseñarle?*
> *Lupe: Sé yo sé.*
> *R: Lo aprendió este verano?*
> *Lupe: Sí este verano.*

> Lupe: yes, yes there are examples like that of the kids how we can teach them ((pause)) mathematics and I wrote that I went to bring them to the store to compare [prices], this is what I learned, and the boy told me that they have it in Kindergarten; he told me mom Lupe I am in "Kinder gartden" and he told me all this that we are learning now. Because he is already going to 1st grade.
> R: And you know what you can teach him?
> Lupe: I know I know.
> R: Did you learn this summer?
> Lupe: Yes, this summer.

Lupe was glad to know what kind of math her children did in Kindergarten. She demonstrated this knowledge in her worksheet and book page for July 24. However, her other book pages focus more on copying text, inserting images, and learning vocabulary

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than on communicating content. Antonio and Sonia, also beginning English speakers, had similar results. Only the more advanced English speakers like Fernando and Aricela were able to write enough to show their knowledge of the content in their book pages.

Correspondingly, five of the more advanced English language speakers, Fernando, Aricela, Mario, Javier, and Arturo, increased their confidence ratings on question 19, "Help my child (children) with their schoolwork," while two of the lower level English speakers, Antonio and Sonia, kept their ratings the same. The latter students said it was too hard to focus on helping their children with math while also studying English and computer skills. In contrast, the teacher said in her final interview that students had learned a great deal about helping their children with math in American schools. In her final background questionnaires, Amanda's ratings on student ability to help their "kids" with their schoolwork went from "1," "No chance" to "5," "Completely Certain."

Although Catherine's class worked only briefly on the theme of helping children with math they seemed to capture the material fairly well and to feel as if they had learned about the topic. Class observations and teacher reports on July 3 show that students did a good job of identifying the types of math needed for the Kindergarten grade level. The students were enthusiastic about the topic and were able to apply the knowledge to specific examples. On July 4, student participants worked in groups reading and interpreting the California math standards aloud. When Catherine gathered them around the tables for further discussion, they paid close attention and responded in detail to Catherine's questions without being called upon. Catherine asked them to come up with examples of how they could teach the math concepts to their children. Three

students volunteered lesson ideas. Observing the class, I was impressed by the relevance, logic, and feasibility of the students' lesson examples. Afterwards, students summarized the standards and wrote them out in bulleted lists on the computer. Later in the session, students improved their confidence ratings on item 9, "read and comprehend the state standards for elementary school education." All but one student increased their rating on this item by one or more points in the final background questionnaire. Correspondingly, Catherine increased her rating of student ability in this area from a "2," "Some chance but only with lots of help," to a "3," "Good chance if they had some help." Two student participants also improved their confidence ratings on item 19, "Help my child (children) with their schoolwork." Catherine increased her rating of item 19 from a "2" to a "4" (fairly certain). It appears that the time with the state math standards helped students develop their knowledge of the initial project theme to the extent that they felt more confident reading about the standards and applying what they knew to help their children.

Nonetheless, the theme of helping children with their schoolwork was not a good match for Catherine's intermediate class in the end (See "Instructional Challenges" for an explanation of project choices). Instead, her students embarked upon a number of mini self-directed themes relating to their overall topic of learning. As they researched and reflected on these mini topics, each student developed different areas of content knowledge. Miriam focused with her group members on describing the school resources and their experience during the summer session. Lillia investigated the idea of learning with computers and the importance of learning English in general. A group of students researched the city where they were studying. Alicia did research and reflected upon her experience taking the G.E.D. exam. Sarai searched the Internetfor information on health.

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She also looked into the theme of helping children in school. Patricia collected strategies for learning English.

The results of students' content learning are reflected in the newsletter articles (Appendix T). On page 1, the article "Summer 2003" demonstrates Miriam's knowledge of the school resources and student experience in the program. The article, "Why is the computer important?" shows Lillia's understanding of the benefits of computers, how they can be efficent, and of what the Internet has to offer. On page 2, "Salinas Offers Many Things" reflects knowledge students pooled and researched on the city geography, demographics, economy, physical structure, and recreational activities. The article, "My experience getting the G.E.D." is a personal anecdote displaying factual information on the G.E.D. The article illustrates Alicia's understanding of the exam and her ability to summarize the large amount of information she had retrieved from the web. On page 3, "Health programs" is a summary of information from a website called "Safe Schools/Healthy Kid." Sarai's organization of the information using questions shows her understanding of the scope of information provided in the website, although the information listed under her first two questions suggests that she did not understand the information fully. In contrast, the article, "Helping your kids with learning" shows off Sarai's knowledge of important parental roles. The article, "Why it is important to learn English" is another impressive example. In it, Lillia summarized the professional, practical, personal, and entertainment advantages of knowing English. Lastly, "Strategies for Learning English" by Patricia is an excellent summary of strategies students read, discussed, and wrote about in class. Patricia demonstrated some strategic knowledge by listing different means of practicing English language skills and of remembering

vocabulary. Student and teacher reports suggested that these demonstrations of content knowledge are just a slice of what students learned. Students developed a variety of areas of content knowledge as they were thinking about, preparing for, doing, and finalizing the newsletter project.

Computer Development

Learners in both classes developed their computer skills. In the beginning class, students made clear improvements. The majority of the students began as novice users not able to turn on the computer or to work alone. By the end of the session, all but one of the participants reported the ability to word process. In particular, they learned how to type, change font style and size, move text on the screen, and search for pictures using Google on the Internet. Learners demonstrated and reported an ability to perform these skills on their own and with fellow team members. In the reflection assignment, "What Did I Learn?" students indicated confidence in their ability to complete a number of tasks on the computer. Seven participants completed the assessment on August 6. Their responses are detailed in Table 5, "Computer Skills Assessment: Amanda's Class."

Table 5, Computer Skills Assessment: Amanda's class

TASK	1. Change Font Size	2. Use Mouse	3. Change Font Style	4. Scroll Down or Up	5. Print	6. Go to Google	7. Click On images in Google	8. Copy An image in Google
Yes	5	7	4	7	6	4	5	5
Yes With Help	1		3		1	3	2	2
No	1							

As shown in Table 5, well over half the participants, or 77%, said they could change font size and style, use the mouse, scroll up and down on a page, print, go to Google, click images in Google, and copy images. The majority of the participants said "yes" they could complete these tasks or yes they could complete these tasks "with help." Just one participant responded "no, I cannot" in response to item one, changing fonts.

When comparing the August 6 assessment to initial student levels in Amanda's beginning class, it is apparent that the students engaged in a steep learning curve. In June and early July, Amanda's students struggled with the computers. They lacked basic skills like turning on the computer, using a mouse, and using essential keys: *enter*, *page up*, *page down*, *delete*, and *space bar*. Amanda reflected upon the early weeks in her final interview:

> At the beginning nobody would really touch the computers. They walked into the computer lab and they wouldn't do anything (p.8).

By mid-session, however, student participants were starting the computers on their own. Collaboratively, they were able to start Microsoft word, the typing program, the program "Rosetta Stone," and the Internet. The students could type, do word processing, copy, cut, paste, and print. By the end of the session, most of the student participants were doing these tasks on their own. Amanda described the students' computer abilities at the end of the session.

> At this point in time, everyone knows how to turn on the computer. Everyone knows how to open (Microsoft word) and everyone knows how to do Google. Everyone – most people can do the change the font size, a couple people can do centering. But when we looked at their covers some of those were centered. I think about half of the people can do centering. Centering is a little more advanced plus we taught that to them at the very beginning of PBL and we didn't really strengthen it too much. So everybody has the basics of typing now (Final Interview, p8).

Amanda also said the students had learned how to open and close programs, use the Internet, and get images on Google. She explained that these skills were completely new to them.

> They can turn it on and off and they couldn't do that before. They can open Appleworks. They didn't know anything about Appleworks as a word processing program; they had never seen a word processing program, so um they can they were not allowed to open any programs, so now they can open Appleworks, they can open type to learn, they can go on the Internet. They had never been on the Internet before. They can go to Google search. They didn't know what a graphic was. They didn't know what an image was. They can now click and drag an image from Google into a word processing program. They had not a clue what a word processing program was. They had never, they had been on the Internet twice and they had gone to one ESL site (p.13)

Other data support the findings of the August 6 assessment. A sampling of field notes on the computer lab activities in July illustrates the progression of these skills.

Class session July 3

A number of students sat in front of the computers which had not been turned on. They were just sitting there waiting for their teacher, not talking and not touching the computers

The Mouse
Amanda said "Kidspix" was an excellent program to start students on to learn how to use the mouse. Students really seemed to need the practice. They struggled quite a bit with it. Students spent a lot of time trying to move it on the page. A number of students kept moving the mouse off the mouse pad. One woman struggled as she moved the mouse along the edge of the mouse pad trying to get the cursor to select tools. She kept trying but the cursor stayed in the writing window. I walked around and showed students how to pick up the mouse and move it back on the mouse pad in order to get better movement.

The Basics
Another woman keeps losing her place on the page; she is inadvertently pressing something. I show her the page up and page down arrows. She loses her page four or five more times, but is able to retrieve her place by using the page up key. When she finishes, I ask her to help a woman behind her who is having the same problem. She instructs the other student. As students finish, we send them around to help others. Some students also finish up their recipes printing out pictures of mole (a special Mexican sauce), ensalada (salad), and arroz (rice). Others go into the typing program. Some don't know how to start the typing program. Lupe is trying to use it without her head phones and she doesn't understand why it won't work. I find her headphones and plug them in. Lupe puts them on. When I come back she says, "no oigo nada" [I don't hear anything). She hasn't touched any of the buttons on the program, so nothing was initiated.

Class Session July 24

I arrived early. Students had already started on the computers. They were printing out work from the day before.

Class Session July 30

Students "had a printing spree." The teacher was running late. This did not stop the students. They filed into the lab and began working. They began finding, copying, and printing images for their books, for each other, and for their children.The printer was churning out images non-stop. After class, Amanda

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declared, "At six weeks they became independent."

As these observations suggest, students learned how to turn on the computer, search for images in Google, copy, and paste the images into Microsoft word, and print. Data from observations, book products, formative assessments, reflections, final interviews, and background questionnaires point to the development of these as well as other word processing skills. Table 6 lists in the left hand column computer skill development that appeared in three or more data sources. An "X" is marked where development was reported or demonstrated.

Table 6: Computer Skill Development across Data Sources

DATA SOURCE TASK	Observa-tion	Book Products	Formative Assess July 17	Reflection August 6	Final Interview Teacher	Final Interview Student	Final Backgrnd Question-naire
1. Turn on and off the computer	X		X		X	X	
2. Use the Mouse	X	X	X	X	X	X	
3. Search for images in Google	X	X	X	X	X	X	X
4. Copy, paste, and print images	X	X	X	X	X	X	X
5. Formatting	X	X	X	X	X	X	
6. Other word processing skills	X	X	X	X	X	X	
7. Typing	X	X	X		X	X	

As shown in Table 6, the development of computer skills was clearly triangulated in the data. One example is the Internet skill of "Searching for images in Google," the Internet site (www.google.com). In the July 17 formative assessment, four of the seven participants said they could go to Google and three said they could with help. Five said they could click on images in Google and copy the image and two said they could do so with help. In the August 6 Reflection, a student named Aricela said she had learned to

"search photos" and Fernando said he had learned how "to go to the Internet." Their reports are confirmed by class observations. The learning is also demonstrated in their book projects which are replete with Google images. On a similar note, in the final background questionnaires, the teacher and four out of seven student participants increased their assessment of student Internet levels. They increased their confidence ratings in regard to searching in English on the Internet for lessons to help their children in school, reading an English language web page, navigating through an English language website, and interpreting images in English language texts on the web. Like the teacher, the students clearly felt that they had developed Internet skills. The development of the other six computer skills is equally clear through out the study data. Overall, this computer development is remarkable given the student's limited prior experience.

In contrast to the beginning class, most of the student participants in the intermediate class already had basic computer skills. During the study, the participants further developed their word processing skills. They reported learning about a variety of tool bar functions, about templates, and about computers in general. In addition, the participants developed electronic literacy skills.

Which computers skills did the intermediate students have at the start of the study? In a formative assessment one week into the study, the student participants said they knew how to to open and close a program, and use different programs such as Microsoft Word, Clip Art, and Word Art. They could create, save, and print documents in Microsoft word on their own. They also knew how to access the Internet. Using Publisher to create a newsletter was new to the students, but they had already used the program to

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create calendars. These student reports were consistent with initial teacher reports and assessments.

Later in the semester, students and teacher reported student learning of a variety of tool bar functions in Microsoft word. In their final reflections and interviews, the teacher and students reported student learning to write, select and align text, cut and paste, format, edit; and insert tables, columns, rows, and pictures. They said they had learned to size pictures, save, publish, and print. Catherine also said that students learned about templates: how to use them and how not to use them. The students had gained an understanding of how flexible the computer could be and understood that mistakes were a way to learn.

> R: They understand what a template is?
> C: Right, yes, kind of anything with templates. If you don't use it, it gives you the idea. I think they understand that. They definitely understand, you don't have to use that picture. You can delete it and put another picture in. OR, we talked a lot with oh, these are columns, you know one column, two columns, three columns. They played with that and then I said, we are gonna do one column this time. And we did that. Um, I don't know if they could just go independently – ahh – um, it's hard to say. I think they would need to be guided again. But I think they encountered the mistakes we all encounter sometimes that makes for natural learning.

In addition, Catherine and her students reported further development of their word processing skills: changing font style and size, reducing and enlarging the screen or windows, making bullets, and using text boxes. Catherine said the students understood these tasks well and that they had had plenty of repetition with them. At the end of the session, Catherine said her intermediate students were "very comfortable" on the computer (Final Interview, p.10). Final student interviews and observations supported Catherine's assessment. Curiously though, few student participants increased their

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confidence ratings on a number of computer related items in the final background questionnaire.

In response to question 10, "Computer (word processing experience)" on the background questionnaire, students all assessed their level as staying the same. They wrote, "Intermediate" on the initial questionnaire and on the final questionnaire. In contrast, the teacher improved her assessment of the students from "mostly intermediate" at the beginning of the session to "100% intermediate" at the end of the session. It makes sense that the teacher might recognize shades of difference in the levels. Her report is confirmed by observations and interviews that suggest that several of the more beginning students had learned a good deal of word processing. The definitions of these levels were narrow in the questionnaires so they did not capture student assessment of their improvement in this area in the same way that the other instruments in the study did.

Several other items on the questionnaire had ratings that showed little improvement. These stagnant ratings were in areas that I had thought the course might cover, but which the class did not actually end up covering: "Guess meanings in context in an English website," "Interpreting images in English language texts on the web," and "Write about learning in English." Not only were there few activities incorporating these skills, but there was also no discussion of what these activities entailed. The lack of discussion and skill use is in no way reflective of the course itself. If anything it shows the difference between what I had anticipated for the lessons and the actual lessons. It shows how hard it was to predict what the students would be doing.

On the other hand, it is clear that, as anticipated, students in Catherine's intermediate class developed skills in the area of electronic literacy. The intermediate

students developed their ability to express ideas electronically through a combination of the word processor, Publisher, and Clip art. They also conducted research on the Internet, and evaluated and interpreted electronic information and images. In their Final Reflections, students reported learning about the process of making a newsletter and communicating in different forms. One student, Monica, said, "I learned more ting How use diferent forms to comuniqueition." [I learned more things, how to use different media to communicate]. Another student, Sarai, said, "We learn how is conformed the Newsletter How make an article and put in it a picture in relation at the article."

In addition, students practiced conducting research on the Internet. They had the opportunity to develop their skills conducting searches, reading, and evaluating information on line. With Catherine's help, Sarai conducted research on health. She found an article about preventing drug and alcohol abuse, selected relevant sections, summarized the information (albeit copying a few words and phrases), and organized it with sub-headings in question format. At Catherine's suggestion, Alicia did online research about the G.E.D. exam. She read an article in Spanish and went to the test website to verify facts about the test contents. Then, she translated the relevant information and summarized it in her article. After a group of students worked on the article about their city, Catherine also had Lillia look on the Internet for statistics on the percentage of Hispanic people living in the city. Likewise Miriam said that the teacher had taught her to find all sorts of information and that she did Internet research at home.

Correspondingly, students increased their confidence ratings in the final background questionnaires on item 2, "Conduct a search in English on the Internet" and item 5, "Select useful resources from an English web page." The teacher and three out of

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six students increased their confidence ratings for item number 2. The teacher and four out of six students improved their ratings for item 5. On item 5, one student, Patricia, increased her rating from a 3 "good chance if I had some help" to a 5 "Completely Certain." The rest of the increases were by one point.

Selecting, evaluating, and interpreting electronic images were other key parts of the class. Catherine coached students to select images relating to the main ideas of their articles. She also had students evaluate the relevance of the images their classmates selected. The notion of selecting appropriate images made an impression on students and they seemed to hone their skills in this area. Finding the right picture was a big deal.

> How you find a picture. This was big, finding a picture that complemented their article. That was a really and the way our clip art program is. There are not really categories. You have to type in what you are looking for (Catherine, Final Interview, p.10).

When I asked Lillia what kinds of things they had to learn in order to do the newsletter, she mentioned the placement of pictures and letters and the need to choose a picture that fits with the writing.

> *Lillia: Donde van las pinturas, donde van las letras, y también, poner una pintura que valla de acuerdo en lo que estamos escribiendo*

> [Lillia: Where the pictures go, where the letters go, and also, to put the picture that goes with what we are writing (Final Interview)].

Student participants learned how to find and choose appropriate images. Catherine worked with two students, Patricia and Sarai, on finding pictures to go with their articles on health and learning strategies. After some trial and error, they both found different pictures of the brain. Catherine commented on this development.

> And I mean that is just a moment of independent and original thinking because they found pictures that worked with it. So they had the ability to search for what

they wanted to relate to their article (Final Interview, p.11)

In the final reflections, half of the student participants said finding an image was the easiest part of making the newsletter.

LINGUISTIC EXPERIENCE: AN ENGLISH LANGUAGE WORKOUT

Participants in the study had a rigorous and engaging linguistic experience in the two computer-assisted PBL classes. In both classes, students engaged in a variety of types of English language listening, speaking, reading, and writing. They spoke English during class discussions, in groups, and in one-on-one dialogues. They heard English language directions, "talk," and computerese. They completed English language reading and writing assignments, and conducted collaborative English to Spanish translation. The classroom interaction was starkly different from that of traditional classroom settings. Rather than doing isolated language drills, the teachers naturally repeated words as they went about their daily activities and routines. Instead of reading pre-written dialogues, students and teachers and student groups engaged in authentic English language conversations. Even Amanda in the beginning class did not focus her class on lower level discrete point tasks. Both teachers engaged students in complex tasks while providing plenty of clear slow repetition of English language words, phrases, and directions. There were multiple opportunities for "meaningful negotiation and interaction" (Swain, 1995). It was evident in observing the participants that they were intellectually stimulated by these linguistic opportunities. The next section details the rich linguistic experience. It begins with a discussion of Catherine's intermediate class and is followed by a discussion of Amanda's beginning class.

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Linguistic Experience: Catherine's Intermediate Class

Students in the intermediate class had constant input from Catherine in the form of directions and authentic dialogue.

> I would say with this group, I do a lot of talk. They do a lot of talk. We listen. We interchange (Catherine, Final Interview p.7).

Students spoke entirely in English with their teacher during whole class activities and one-on-one conversation. When problems came about such as how to fit a calendar into the newsletter layout or how to learn English, long group discussions occurred in English. Transcripts of the tape recorded sessions show many such dialogues running 10 to 15 minutes in length, full pages of English language text. A good percentage of the English language exchanges were authentic. The English was part of conversations during which students expressed ideas and planned their newsletter production. There were few scripted dialogues. One example was the extensive English language dialogue Catherine had with students around their articles. Among other topics, they brainstormed article ideas, discussed the main ideas of their articles, talked about the content and format of titles, planned the newsletter layout, discussed computer tasks, and evaluated their work in English. On July 9, Catherine asked students to talk about the main idea of their articles. All seven students could be heard participating in the English language discussion. On July 17, the class talked about the layout of the newsletter. Four of the seven participants took part in this discussion using English. When Catherine asked about how they would fit everything into the newsletter, one of the students, Sarai, spoke for a good three minutes in English explaining what order she thought the articles should go in and why.

Catherine had extensive one-on-one conversation with students about a variety of topics: class, the weather, politics, their lives, and most frequently, their writing. She often sat down with individual students and discussed the content of their writing. In English, they discussed the pictures selected, the grammar, organization, punctuation, and vocabulary. Catherine explained:

> I had an opportunity to sit down with them and talk to them about their writing. Directions were given in English. They had a huge amount of listening. (Final Interview p.14, Catherine)

Catherine worked with Alicia in this way on her G.E.D. article. They talked about the different ideas in the article, and how Alicia could divide it into three paragraphs. They discussed several pictures. Alicia explained why she liked the pictures and how they related to the article (Final Interview p11, Catherine). Catherine gave her some indirect feedback on the grammar in the article. For example, she pointed out areas where the word order was awkward. The next day, Alicia came back with a revised article. Catherine was impressed that Alicia was able to understand and apply so much information from their strictly English conversation. The text in Alicia's revised version was different. The syntax was better, and the topic was clearly explained. It made Catherine realize how much students were "taking in." It was remarkable how the planning, writing, and editing of articles was carried out with so much English. Catherine marveled at this development.

> The discussion was and it's all in <u>English</u>. All this, I'm editing them in English! There aren't any. So in the discussion we are having about their work; it's in English! So they are really taking- >I mean I realized>, they are really taking a lot in! (Final Interview p.7, Catherine)

In addition to one-on-one English language dialogues with their teacher, students used some English during pair and group work activities. Class transcripts and observations show pairs and groups using the English language for a variety of purposes. The learners used English together to discuss English language assignments and instructions and to ask each other about English language pronunciation, spelling, grammar, or vocabulary. They also read aloud in groups to practice their English pronunciation. The use of English in groups happened naturally without Catherine having to tell students. "When students presented an article in English, they automatically started using English in their groups" (Catherine, Final Interview p.16). Students had "friendly debates" in English about their articles, the newsletter format, and other pieces of the project. In their final interviews and reflections, several students said they learned more English while working in groups because they were able to help each other. Catherine often noted and could be heard encouraging the students when they spoke English together. She heard them adding more English words to their Spanish language dialogue.

> And I heard them doing a lot more Spanglish. I hearing them kinda go. I hear them with each other dropping back and forth a little bit. I hear that. Of course everyone's natural inclination is just to use your natural language but I do, I hear exchanges of phrases in English (Final Interview, p.15).

In addition, students employed English to discuss the computer and utilized English language "computerese," computer terms. English compuerese was frequently interspersed in Spanish language conversation. Students used "Spanglish," a combination of English and Spanish, to discuss word processing and work on the Internet. Catherine explained how even her lower level English speakers used English for computer tasks.

> However, when you are doing things on the computer someone, like Patricia really does not speak a lot of Spanish. I mean not speak English, but when she

demonstrates on a computer. Let's say another student does not know how to insert clip art for example. Well, the words she is going to use are you are going to in Spanish and then she is going to say, Insert. Picture, clip art, so when you are mimicking that language, cause there is not necessarily a translation for it. (Final Interview, pp.16-17)

Even when terminology was not needed, students needed English to understand and communicate with their teacher about computer tasks. The following excerpt is one example of how students used the English language to discuss computer tasks. In this July 31st transcript, the student explains her desire to make a calendar, to put in a schedule, and to learn more about the publisher program.

> Female student: do you think we can, um, make a calendar
> Catherine: uh huh
> Female student: the two program here, the calendar here,
> Catherine: ok
> Female student: oh
> Catherine: So you want to put like an August calendar you think or a September or, we'll do August or September um, you know what yeah, we can shrink an article. We can shrink an article and then um, put in a calendar
> ((Baby cooing))
> Catherine: what would be a good one to kind of shrink?
> Female student: the we need to, the schedule
> Catherine: oh, ok ok,
> Female student: I need to learn

After some time, Catherine comes back to check on the student. The student tells Catherine that she wants to do another calendar, requests help, and explains some problems she is having.

> Female student: We wanted to try to do another one
> Catherine: that's fine, that's good
> Female student: to practice
> Catherine: and then you look on your list
> Female student: ah el calendar remember
> ((Baby screaming))
> Catherine: the best way to learn is to play
> Female student: I think this goes this way
> Catherine: ok then let's try

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Female student: but it change the month (Class transcript, July 31)

Computer driven or not, the intermediate students had constant English language input. In addition to English language directions and discussions around computer tasks, the teacher instructed and talked to students in English. She asked personal and academic questions in English, and she gave feedback and encouragement in English. Students listened and responded to her English both verbally and non-verbally as they completed tasks. For Lillia, the English language listening became automatic, something she was not even thinking about as she was doing it. Lillia explained in her interview:

> Lillia: Ya con eso, a veces, a veces aunque no estoy poniendo atención, sí estoy haciendo algo. Hay que trabajar en la computadora o estar leyendo algo pero estoy escuchando. A veces yo no me doy cuenta pero todo se está quedando aquí ((laughing)). Y hablando con la maestra, con compañeros. Sí he aprendido.

> [Lillia: Already with this, sometimes, sometimes even though I am not paying attention, yes I am doing something. It is necessary to be on the computer or to be reading something but I am listening. Sometimes I don't even realize it but everything staying here here ((laughing)).And speaking with the teacher, with classmates.Yes I have learned. (Final Interview p.3)

Listening was also an active process in which students had to respond appropriately whether it be in the form of a reply to a question or following directions for group work or tasks on the computer. In her final interview, Catherine explained that students' response to her directions on the computer allowed her to measure how well they understood her English. When students understood directions on the computer, they received double positive feedback: encouragment from Catherine and satisfying computer results. Active listening was rewarded in these two ways from the skill building stage to the article production stage. A good example took place on July 2. Catherine showed some Fourth of July web sites with animation and audio. First, students had to

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listen to and follow Catherine's directions on how to enter the site. The URL was long and complex and students had to try and retry several times. Once they got into the site, Catherine directed them in English on how to activate the sounds and animated parts of the webpage. Eventually everyone got the fireworks in the site running. The results were exciting for the students. They aksed if they could do more. Catherine gave them a second URL. Then she stepped aside to talk with me about another topic. Clad in earphones, the students entered into the second site and lost themselves in the virtual tour. They had listened carefully to Catherine's instructions and were reaping the benefits. Later, in the article production stage, an urgency was added to the students' need to listen and comprehend instructions. They were working under a deadline and the students were attentive because they wanted to achieve certain results.

Although little vocabulary was taught in a traditional way with drills and repetition, plenty of opportunities for vocabulary development occurred in Catherine's class.

> There wasn't really any form of grammar I was seeking to teach. There wasn't really any um specific vocabulary. They came with the vocabulary; it emerged when you put together a newspaper (Final Interview p.7, Catherine).

Instead of a more traditional curriculum with classes structured around specific language points, classes were structured around skill building for the projects and project tasks. Within this context, there were fewer opportunities to reuse specific language in itself. However, Catherine developed a class routine that allowed for the natural repetition of language, and the projects provided a context that made the language memorable. One part of Catherine's classroom routine was to gather students around the tables for discussion following work on the computers. For example, she worked with the students

to plan, analyze, or critique different parts of the newsletter project as it was coming together. Language was practiced and repeated within this routine.

Opportunities for vocabulary development were also made through the reading done in Catherine's class. Students did different types of English language reading at the beginning, middle, and end of the session. The goal of the initial reading "was for students to see what a newspaper was and what went into it" and "to get that concept of what was the main point" (Final Interview p.15, Catherine). With these objectives in mind, students read the newspaper, "Easy English Times." They read articles about the farm workers and strawberry pickers and answered comprehension questions. Catherine had students respond to, evaluate, and summarize the different articles they read. Students wrote true and false statements about the articles as well. They had to read each others' statements and determine whether or not they were true. The learners did reading in groups and reported their understandings to the class. They also did various reading comprehension and jigsaw type activities. In the middle of the semester, students conducted some Internet research that entailed different types of online reading. Some of the reading they did on line was directly related to their articles: health programs, statistics about their city, and information on the G.E.D. Other online reading was just for practice, pleasure, or personal interest. In the middle and the end of the session, students read and reread each others' articles in order to comment, summarize, and evaluate them. Over the whole summer session, the students' reading experience was linked to their learning about newspapers and the creation of the articles. The texts they read were, for the most part, related to topics of personal interest and personal experiences and to the students' article themes.

Writing in Catherine's class was equally meaningful. Most of the writing students did was for their newsletter. For the newsletter, the students wrote about topics of personal interest relating to the theme of learning. As Catherine explained, it was original writing, not writing copied from a textbook. Throughout the session, Catherine emphasized the concept of real writing, using publishing terms and treating each student's ideas seriousy. The newsletter writing had an authentic purpose to communicate with a real audience. According to the students, the audience for their newsletter included their families, other students in the program, the coordinator, and the teachers. Catherine reflected on the students' feelings in her final interview, "They felt really important doing something and publishing it" (p.16). "I think they were really really excited. I think those newspapers are going to be shown" (p.17). When the newsletter was published, the students agreed that they felt like "real writers" (Class Transcript, August 7). In their final interviews, Lillia and Miriam both said they were proud of their work.

Learners in Catherine's class had ownership of their writing from the initial idea generation to the final editing. Class observations, analysis of article drafts, and student and teacher reports show this ownership developing through student choice and decision making. The students chose the topics they wrote about. They selected the information to include in each article. They decided which articles to keep, leave out, or add to the newsletter. They also chose how much and what to edit in their articles. Catherine emphasized the student generated nature of the writing in her interview:

> This really felt to me like the one experience when I look at what they wrote ((pause)) what they wrote, they wrote about something. They made it cohesive, they made changes; they are not perfect. There's some awk- they're not perfect, BUT they're understandable and they are creative pieces of written work and they published em! (Final Interview p.7)

It felt like really student generated writing! (Final Interview p.17)

Even the editing process was a collaborative process between students, teacher, and, in one case, family members. Catherine did not do any of the actual writing or editing. Instead she scaffolded the process. She provided indirect editing comments in relation to the organization, grammar, content, vocabulary, and punctuation. She listened to students "talk out" their article ideas, responded to and summarized what she understood, and encouraged good writing. Students also worked in groups co-constructing their articles. They talked through ideas, edited, and responded to each other's work. In the end, each author chose which comments to respond to and which edits to incorporate into their writing. It was "like high school level" work without the "red pen" (Personal communication July 23, Catherine).

The complete writing and publishing of their own work was "a really big leap" for the students and it moved the teacher to see such success (Final Interview p.7).

> I don't feel like I taught writing. I really feel like THEY wrote this, I mean I'm kinda, they WROTE, they really wrote! And they all improved on writing. I know they improved on writing. ((pause)) and um, communication. More than just writing! It was written to communicate. They communicated in English! (Final Interview p.17, Catherine)

In addition to the different types of linguistic engagement, Catherine's students had a variety of experiences with language and general learning strategies; however, the intermediate students interpreted the phrase "language learning strategies" as ways to learn and practice English. Class transcripts from July 8 indicate a good deal of discussion related to second langauge learning strategies. One student took notes on this discussion and the students published a summary of strategies in the newsletter. The

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strategies they listed included working in groups, watching select T.V. programs, listening to the radio or American music, reading a book or magazine, practicing with family members, speaking more with American people, attending class, writing letters, and using the computer. The class considered second language strategies in the traditional sense as well; they looked at specific actions for making language learning more efficient, effective, and fun (Oxford, 1990)[11]. Namely, they discussed the cognitive strategy of repetition and one memory strategy. Several times, interested students brought up the memory strategy of remembering the first letter of new words in order to learn vocabulary. Catherine also presented and modeled general learning strategies for the students and encouraged them to develop and apply their knowledge of themselves as learners. For example, in one class session, students read about multiple intelligences and discussed what types of learners they were.

Over the course of the summer, I observed students employing an array of second language and general learning strategies. The students applied the memory strategies of using imagery, employing action, and practicing. They learned the English language names of shapes by drawing the images in Microsoft Word and they studied prepositions by talking about the location of the shapes. The students employed computer actions as they learned English language computer terms. They practiced the terms as they discussed computer activities. The learners also employed social strategies such as asking questions and working with groups or partners.

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11 Oxford defines learning strategies as "actions taken by the learner to make learning easier, faster, more enjoyable, more self-directed, more effective, and more transferable to new situations" (1990, p.8).

In addition, students used the compensation strategies of selecting language for reporting, circumlocution, and guessing intelligently. After speaking among themselves in groups, they selected portions of their discussion in English. During discusions, students used words they knew to describe words they did not know. In one instance, a student talked about cooking meat outside on a fire, circumlocution for the word "barbecue." Students guessed intelligently using linguistic and other clues. They employed the cognitive strategy of recognizing and using formulas and patterns as they paid attention to cognates and Latin roots. One of the students' favorite strategies was remembering the definition of an English word by recalling a Spanish word with the same first letter, such as "car" which is "coche."

Metacognitive strategies and general learning strategies were employed as well. The students used general learning strategies such as following directions, breaking tasks down, modeling, and structured focusing. Students followed instructions carefully when they were given a task. Under the teacher's direction, students broke large tasks like understanding the state math standards down into smaller activities such as understanding the standards for kindergarten math. They used the newspaper Easy English Times as a model for their newletter. The teacher also guided students in "Structured focusing" strategies such as previewing texts by using the title of articles to guess their contents. Lastly, Catherine helped students to utilize the metacognitive strategies of schema building and reflection. She had students relate reading topics and vocabulary to personal experiences. During class, she frequently called upon students to reflect upon what they were learning. Early in the session, students also discussed and shared strategies for language learning. At the end of the session, Catherine gave students a final reflection

assignment. In their reflections and final interviews, students and teacher recalled some of these strategies. Over the course of the summer, they had employed memory, social, compensation, cognitive, general learning, and metacognitive strategies.

Linguistic Experience: Amanda's Beginning Class

Like Catherine's students, students in Amanda's class had a good amount of English language listening and speaking practice, authentic dialogue, and opportunities for communicative interaction and negotiation. The beginning class students listened to and spoke English during whole class discussions and one-on-one conversation with their teacher. They heard plenty of vocabulary in context as Amanda repeated key words and routine phrases. The learners listened and responded to the teacher's oral and written directions in English. In teams, students helped each other with English pronunciation, vocabulary, and spelling. More advanced students sometimes became teachers of English and were frequently translators. Students could be heard reading, practicing, and playfully repeating English language words at their own initiative. Students employed English to complete English language assignments and to discuss computer activities. They used English language words and phrases in their written work. They also used Spanglish. They threw English language words and phrases into Spanish language conversation and writing and made up English and Spanish combinations such as "la teacher."

Despite the language barrier, Amanda generated wide participation in English during whole class discussions. In the following short excerpt, three different beginning students contributed English language dialogue.

Amanda: So we have another new person what can we do?
Fernando: putting into group
Sonia: which group does she belong?
Aricela: Zindergarden (Class Transcript, July 2)

Amanda managed to have fairly complex conversations with her beginning students by having group leaders report on team discussions and more advanced English speakers translate for lower level English speakers. On July 2, Amanda helped students to discuss the difficulties they had studying for and passing the G.E.D. The conversation continued in English for over 25 minutes. On July 3, Amanda managed to get four more students involved in their conversation about the G.E.D. The four students used English when they could and had others translate when they did not know the English. These collaborative conversations became a regular event in Amanda's class. Much of the dialogue Amanda had with students was authentic. When Amanda called upon students to speak in English, it was generally to answer questions for which she did not know the answers. On July 3, Amanda went around the room conversing with individual students about their children and interests. The conversations had a real purpose other than language practice; Amanda needed to gather the information in order to be able to help them organize their groups.

Students in Amanda's class had many opportunities to study vocabulary in context. Amanda had students repeat vocabulary as they went about tasks, and she repeated routine phrases nightly. In the following excerpt Amanda has students translate vocabulary needed for a task in which students learned about the topics of dividing and sorting in Kindergarten math.

Amanda: Cooperated. ?Cómo se dice cooperated? [How do you say "cooperated"?]

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Students: Cooperar! [cooperate]
Amanda: And divided? ?Como se dice divided?[How do you say, "divided"?]
Students: Divider. [divide]
Amanda: Ok, cooperated and divided.

Every night, Amanda repeated phrases such as "take a break," "please sign my book," and "See you Wednesday." In their July 17 course evaluation, students requested more vocabulary and translation. Subsequently, Amanda began listing relevant vocabulary in English and Spanish at the top of daily class worksheets. The vocabulary was reviewed at the beginning of each class session. It was then used in class discussions and to give instructions. For example, on July 30, students learned the words "cover" and "by." Later Amanda instructed them on how to make a "cover" for their books and discussed the word "by" as she explained the importance of putting the author's name on the cover. In addition, students practiced and tested their knowledge of English language vocabulary by typing in English language search terms in Google and listening to and following directions on the computer.

Teacher and computer supported English study were not the only types of English study students engaged in. Class transcripts, student, and teacher reports show that students frequently studied English in their teams. They took turns being teachers and helped each other with English language vocabulary, pronunciation, and spelling. When I asked Fernando if he spoke English with his classmates he responded, "Si. Y trato de decir unas palabras que no se y también cuando yo no se les pregunto a ellos." [Yes. And I try to say some words that I don't know and also when I don't know I ask them].

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Class transcripts from July 2 to August 6 provide a number of examples of students

assisting each other with English. In the following excerpt, students help each other

pronounce the word "help."

> *Miguel: es "hlf" o "help"?*
> *Martine: "help"*
> *Miguel, Martine, and Christina: ((discussing "help" in Spanish))* (Class
> Transcript, July 2)

In the excerpt below, Lupe consults with a student named Aricela about English language

spelling

> *Lupe: Por que en inglés no más le quitas la o al ultimo, ¿verdad?*

> [Because in English you just drop the "o" at the end, right?]
> *Aricela: yes* (Class Transcript, August 6)

Team leaders like Aricela could often be heard giving mini English language lessons to

other students. In the conversation below, Aricela tells Lupe how to make an affirmative

or negative statement in English using "I do" and "I don't."

> *Aricela: la otra pregunta es si a ti te gusta lo que te está enseñando. Siempre se
> ocupa o no más puedes contestar "Yes I do or no I don't." No más se contesta
> con el "do."*

> [Aricela: The other question is if you like what you are being taught. This always
> deals with or you can just answer, "Yes I do or no I don't." Just answer with the
> "do"]. (Class Transcript, July 24).

Students seemed unselfconscious as they practiced English together, and they had

fun doing it. In the excerpt below, Aricela and Lupe practice the English word "coupons"

and a third student replies in English "what?"

> Antonia: ¿Cuántos son doce cupones, coupons ? [how much are twelve coupons,
> "coupons"]
> Lupe: How much money is in the "cupons"? ((mispronouncing coupons))
> Lilia: What? (Class Transcript, July 24)

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When the students practiced together, they were often playful. The following dialogue

shows students having fun with their English language team names.

> *Lupe: Nosotros nos llamamos los Warriors*
> *Male student: nosotros nos vamos a llamar los "relax" ((students laugh))*
> *Lupe: Que ellos se van a llamar los relajados*
>
> Lupe: We are called the "Warriors"
> Male Student: We are going to be called the "relax" ((students laugh))
> Lupe: So they are going to call themselves the relaxed (Class Transcript, July 9)

Students imitated Amanda playfully as well. In the excerpt below, two female students

repeat a couple of the routine phrases Amanda uttered each night. They repeat them

playfully in English and then translate into Spanish.

> *Female student: See you Wednesday, so los veo el miércoles.*
> *Maria: Please sign the book, por favor firme el libro.*
> (Class Transcript, August 6)

In the last month, students could also be heard dropping short English phrases like,

"Thank you," "What's that?," "Help me," and "See you Wednesday" into their

conversations.

In addition, student conversations were peppered with English phrases and

computer terms as they collaborated on their work in the lab. Students seemed

comfortable practicing and using English in their teams. When I asked Lupe what she had

learned with other students in groups, she said "aprendí muchas cosas de inglés" [I

learned a lot of English things] (Final Interview). Fernando explained how students felt

more comfortable working together.

> *He aprendido que trabajando en grupos es más divertido porque conoces más a*
> *todas las personas y puedes hacer comentarios más inteligentes y sin pena.*

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[I learned that working in groups is more fun because you get to know all the people more and you can make more intelligent commentaries without shame] (Response to Final Post Project Interview Question, "What have you learned in this class since last week," August, 7)

In addition to practice speaking English, Amanda's students had opportunities to practice sentence level English language writing. The average student participant in Amanda's class completed all or part of four worksheets and four computer generated responses in English and Spanish. No grades or corrections were provided for this work, but students frequently commented on each other's work, received plenty of positive feedback from their teacher, and shared the work with their families.

Students had opportunities for communicative negotiation and interaction in the areas of listening and speaking and while working on the computer (Swain, 1995). In instances where language errors inhibited oral communication, students had to repeat and revise their language. The teacher would ask the student to repeat the correct form or the students would occasionally repeat it themselves. In many cases, the modifications were collaborative. Students helped each other to revise language when misunderstandings occurred.

Individually, students interacted with the teacher in meaningful contexts where the need to comprehend one another pushed them to change, repeat, or translate language that was not understood. On July 3, Amanda and Lupe managed to exchange information about the number of children Lupe had and their ages. At first, they asked another student Aricela to help them communicate, but in the end they understood each other. Their need to exchange information pushed them to guess, infer, and translate meanings.

Amanda: Lupe how many children do you have? What grades are your kids?
Lupe: ¿Qué? ¿cuántos chidren yo tengo? [What, how many children do I have?]

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Amanda: yes
Lupe: two
Amanda: What grades?
Lupe: ¿Qué dice? ¿Aricela que dice? Qué en que año van? [What is she saying?
Aricela: What is she saying? That what year do they go?]
Amanda: Aricela what grades are Lupe's children in?
Lupe: In second grade, and Miguelito en primero. [In second and little Miguel in first]
Amanda: Oh primero, first grade. ((Amanda is translating))

Amanda also elicited modifications of language when the meaning was not clear or when students dropped Spanish into their English. However, she did not correct language that did not impede understanding, unless for pronunciation purposes. In the following conversation, Amanda and a student named Javier are discussing the final reflection questions. Javier asks Amanda what she wants to change in the class. He uses the wrong part of speech "changing" instead of "change." Amanda can still understand the question so she responds without correcting him. Then, Javier says "change the class." At this point, Amanda does not know if Javier means "change the class" as in go to a different class with a different teacher or "change the classroom," meaning change the room location. She asks Javier to clarify. He modifies his language. It becomes apparent that he is actually joking about changing "the classroom" because they have a running joke about all the equipment breakdowns.

Amanda: "Hola Javier."
Javier: Teacher, what do you want to changing the class?
Amanda: ((laughing)) the computers are working then I'm happy. ¿Cómo se dice no problema? [How do you say, no problem?]
Javier: Change the class
Amanda: Change the classroom or change the class?
Javier: The classroom ((laughing)) (Class Transcript, August 6).

Although there was no test of whether Javier learned the words "class" and "classroom" during this study, he certainly had the opportunity to reconstruct his knowledge of these

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closely related words as he interacted with Amanda (Swain and Lapkin, 1995). Other students had the chance to learn vocabulary as Amanda called attention to their "Spanglish," Spanish-English combinations. When students spoke partially in Spanish, Amanda repeated their phrases in English. In the following excerpt, Fernando responds to Amanda using the word, "en" [in] in Spanish. Amanda restates his phrase in English.

> Amanda: and Fernando how many kids do you have?
> Fernando: en the kindergarden
> Amanda: in kindergarten (class Transcript, July 3)

However, in the July 3 transcript, Fernando does not repeat the corrected form "in." In all of the class transcripts and observations, few if any of the beginning students could be heard repeating corrected language on their own.

On the other hand, students did correct their language during instances of collaborative communication. Collaborative communication occurred when students worked together to respond to the teacher in English helping each other to translate and to come up with the right English words. Students frequently used collaborative communication to facilitate whole class discussions and English language dialogue with the teacher. These occurances often resulted in collaborative negotiated interaction, where students helped each other to communicate and to modify language when misunderstandings arose. In the following excerpt, Amanda asks a female student how many children she has. The student thinks Amanda is asking about the age of her children and she responds, "catorce" [fourteen]. Another student, Javier, restates the question in English, "No, how many?" When the female student explains her confusion in Spanish, Javier makes a joke out of it and tells Amanda she has fourteen children. This pushes the female student to respond correctly, albeit in Spanish.

Amanda: How about your children? They are in Mexico? How many?
Female student: Catorce [fourteen]
Javier: No how many?
Female student: Oh, ¿Cuántos hijos tengo? O yo creí que de edad. [oh, how many kids do I have ? Oh I thought of the age]
Javier: She has fourteen children, that is what she said.
Female student: Siete. [seven]
Amanda: Seven!
Female student: El más chico ya pasó a Segundo. [the littlest already passed into second] (Class Transcript, July 3)

Collaborative communication such as that of Javier and the female student on July 3, allowed for extensive interaction and negotiation of meaning in English. The computer also became a tool for negotiated interaction. When students spelled search terms incorrectly in English, they received the wrong images. When they misunderstood English language directions on the computer, their word processing would falter.

Overall, the analysis of communicative negotiation and interaction in this study is mixed. On the one hand, errors that did not inhibit computer production or oral communication were generally not corrected. On the other hand, the desire to complete tasks on the computer pushed the students to modify language. Similarly, the need to communicate led the teacher and students to infer and translate meanings. Amanda also elicited language modifications when errors inhibited communication or when students used Spanish in their English. Students modified their language when misunderstandings arose during collaborative communication, but they could rarely be heard repeating or reviewing corrected language on their own. One reason individual students may not have modified their speech may be their lack of academic experience and strategic knowledge. I first hypothesized that students were not correcting their speech because of extensive Spanish language use. Spanish seemed like a crutch, something students could fall back

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on rather than pushing to correct their English. However, this hypothesis was challenged by repeated instances of collaborative negotiation and interaction. In conversations such as the one with Amanda, Javier, and the female student on July 3 (shown above) the use of Spanish actually enabled students to collaborate on their English language communication and learning. In the end, my hypothesis was that Spanish language use was actually a productive factor in the linguistic and overall learning experience.

Spanish language use in the study helped students to work together and to accomplish tasks. Amanda's beginning class used Spanish to organize their work and teams, explain teacher directions, give instructions to one another, facilitate whole class discussions and individual dialogues with the teacher, help each other with group assignments, correct one another, ask questions, exchange information, discuss their learning, and share personal information. Class observations and transcripts from July 2 to August 6 show that the Spanish language conversation was predominately on task, or closely related to class assignments. Students also wrote partially in Spanish on their formative assessments, course evaluations, and reflections. The written Spanish had errors in spelling, capitalization, and punctuation indicating that many of the students were working simultaneously on their English and Spanish language literacy.

Amanda had students help translate into Spanish in her beginning class because many students did not speak a word of English. In the mid-term course evaluations, three students requested more Spanish either in the form of more translation or another teacher that could speak Spanish. In response to this student feedback, Amanda had all of the class worksheets translated line by line in Spanish and English. Relevant vocabulary was also listed in Spanish and English at the top of each worksheet. In addition, the teacher

continued encouraging team leaders and more advanced students to assist with Spanish

language translation. They helped to translate what she was saying on a daily basis.

At first only one or two males could be heard translating. Later seven different male and

female students got involved in helping with the translations. They translated to help

others to communicate with the teacher, to facilitate whole class discussions and problem

solving, and to communicate questions, comments, and jokes. The teacher used student

translation as a means of checking students' comprehension and of getting everyone in

the multi-level group involved. Students and teacher also used translation to give and

further explain directions, to understand reports students made on their teamwork, to

exchange information, and as a means of learning vocabulary. Translation helped bridge

the gap between advanced students and beginners. It kept the more advanced students

involved and challenged. It allowed even novice students to understand and participate in

fairly complex activities and discussions. For students like Fernando, it also was a good

workout of their English.

> *R: ¿Usted traduce mucho para los otros? Are you learning anything when you translate?*
> *Fernando: He aprendido mucho the new word.*

> [R: You translate a lot for the others? Are you learning anything when you translate?
> Fernando: I learned a lot 'the new word"].

> *R: ¿Aprendió a hablar el inglés más?*
> *Fernando: Así, traduciéndole es como he aprendido más [inglés]; por eso no me da pena, no me da pena como todos aquí estamos aprendiendo; pienso que todos no sabemos por eso no me da pena.*

> R: Did you learn how to speak more English?
> Fernando: Like this, translating is how I learned more [English]; for this reason it doesn't bother me, it doesn't bother me since everyone here is learning; I think we

all do not know for this reason it doesn't bother me.

In conclusion, Spanish language use, and in particular, Spanish language translation was an effective strategy. Not only did it facilitate complex discussion and task work in English, but it was also a learning opportunity for the translators.

Amanda's students discussed and employed additional language learning strategies. In groups, students talked about the strategies of using a dictionary correctly, getting help from English speaking family members, and using the computer. Students shared ways to learn English by using what they knew to learn more, "going for it" (Lupe, Class Transcript, July 2), studying hard, and employing experiential learning strategies like learning numbers through telephone numbers and letters through directions. Students also discussed bad learning strategies such as copying and cheating. During the session, I observed students employing a number of learning strategies which I recorded and classified according to Rebecca Oxfords' "Strategy Inventory (1989).

Amanda's students engaged in affective strategies such as calming oneself down in order to be able to concentrate. For example, a new student who had just arrived from Mexico said she was too nervous to concentrate at first on her language study, but after talking over some of her problems and feelings with her classmates, she felt more relaxed and able to pay more attention. Social strategies such as asking for help from peers or teachers, cooperating with peers, and working in groups were a big part of student activity as well. As the facilitator, Amanda guided students in the use of memory strategies. She showed students how to select images from the Internet to help them remember new words and modeled the strategy of organizing language for study. For example, she showed the students how to put lists of new vocabulary they had collected

from various tasks into the same part of speech. Amanda also modeled metacognitive strategies. She asked students to use the background knowledge they had from working with teams in the job many of them had as packers in order to understand the system of organizing team roles in PBL. In addition, Amanda continually encouraged students to reflect on their learning.

Students employed compensation strategies as well. For example, when working on the English language task based worksheets in class, students selected language they understood to use in discussions and to copy in their computer documents. They also coined words in order to to be able to communicate with the teacher or to talk about computer tasks. In many cases, components of the computer and computer commands were unfamiliar to students, so they would make up words or use circumlocution to discuss them. In addition, students switched to their native language, requested help, and selected topics they could discuss.

Lastly, the learners utilized cognitive strategies such as translation and taking notes. One combination of strategies that did not fit into Oxford's inventory was that of using imagery to negotiate text. As students engaged in Internet searches, they were paying attention to and monitoring their English spelling and word choice, testing their English in the search engine, and taking risks wisely by trying out what they knew on the computer (metacognitive strategies). At the same time, they were using the images from their searches to guide their language construction.

LINGUISTIC GAINS

The following section includes a discussion of linguistic development in the areas of English language computerese, vocabulary, listening and speaking, reading, writing, and second language strategy. The section does not make claims about language acquisition and only a few areas of learning are noted. Instead the focus is on linguistic *development*, areas of growth. Linguistic development was only considered when there were multiple areas of evidence across data sources. Development had to be reported and or demonstrated clearly in more than two ways for it to be included in "Linguistic gains" (See "Methods" for further information). The section begins with a discussion of linguistic development in Catherine's and is followed by a discussion of linguistic development in Amanda's class.

Linguistic Gains: Catherine's Class

There was less direct English instruction in Catherine's Intermediate class than in traditional English classes, but students had plenty of opportunities to develop their English while they were engaged in their projects. One day while working on an article, a female student explained, "Estamos mejorando nuestro English mientras que trabajamos" [We are improving our "English" while we work] (Sarai, July 17). Students in Catherine's class developed English language computerese (technical terms relating to computers and their actions), a collection of vocabulary and idioms, active listening skills, speaking fluency, and specific types of reading. They developed writting language, content, grammar, mechanics, process skills and fluency. They also developed some second language learning strategies.

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Computerese: Catherine's Class

In the intermediate class, students demonstrated and reported learning computerese. Catherine said that she knew students had learned English language computer terms because they were able to follow her English language instructions on the computer, and they used the English terms when helping one another. As the students learned new tasks on the computer, they developed their knowledge of new English language terms. The development of computerese was evident in class observations and transcripts. Students reported learning computerese in their final reflections and interviews as well. List one shows terms that a number of students reported and demonstrated learning.

> List One:
> Computer
> Insert
> Mouse
> Picture
> Print
> Save
> Search

Students also demonstrated knowledge of various terms by using them to describe their learning in their final reflections and interviews. I include these terms in list two.

> List two:
> Copy
> Disk
> Internet
> Tools
> Typing

Although it is possible that Catherine's students learned additional terms, lists 1 and 2 reflect those that were repeated across instruments and clearly mentioned by students.

Vocabulary and Idioms: Catherine's Class

In Catherine's class, vocabulary items were not predicted and taught in advance but emerged as needed. Work on the project also enabled students to apply vocabulary knowledge they already had.

> There wasn't really any specific vocabulary. They came with the vocabulary; it emerged when you put together a newspaper. I didn't really pull out any- oh these are the words we are going to use. (Final Interview p.2, Catherine)

Students practiced and studied specific idioms and language related to the projects. They had the opportunity to develop their knowledge of idioms that Catherine used repeatedly in class routines. Data from July 23 and August 7, for example, shows how students practiced the comparative "bigger" and expression "to catch attention." One student demonstrated her learning of the expression 15 days after its introduction.

On July 23, the class looked at a model newspaper and planned their newsletter layout. They talked about titles and how they were bigger than the actual text of articles. Catherine asked the students about the purpose of the bigger titles. She used the expression, "catch your eye." One student, Monica, asked me in Spanish to tell Catherine that the bigger titles, "llamen attención" [call attention]. Alicia quickly translated, "grab your attention." Catherine repeated the expression with the word "catch," "catching people's attention," and gestured to catch. Looking interested, the students made sounds of understanding.

> Catherine: Okay, yah. What do you notice about the titles in comparison to the articles. All of the titles are a little (pause)
> Sarai: Titles are big.
> Catherine: Bigger, okay. And a little bit darker, to catch your….
> Female student: Eye
> Catherine: To catch your eye. Okay
> Monica: Dit le Que llamen attención ((speaking to researcher))

[tell her that they call your attention) R: To call your attention
Alicia: grab your attention
Female student: Yah
Alicia: Let it big. ((gesturing))
C: Exactly! Are photos catching people's attention?
Sarai: Mmm, huh ((other students say yah))
Catherine: So Miriam think about when you do your paper, you want to think about a title the and ((laughing)) the pictures that ((gesturing to catch))

On August 7, the class repeated their routine of gathering around the tables to analyze and critique their newsletter. This time, Catherine asked the students about the pictures. "What do the pictures do?" she said. Alicia responded, "ohhh, uh ((gesturing to catch))." Catherine gestured and replied encouragingly, "Look! Yah, exactly," and Alicia softly repeated the expression "catch attention." Catherine responded enthusiastically to Alicia's recollection of the expression they had discussed 15 days earlier.

Catherine: You know what I noticed too is that the pictures. The illustrations that were selected. What do the pictures do?
Alicia: ohhh, uh ((gesturing to catch)).
Catherine: Look! Yah, exactly
Alicia: catch attention
Catherine: Thank you, exactly!
Alicia: nah ((looking down and blushing))
Catherine: I agree. The pictures really jump out at you. They make you want to look.

Observing this dialogue, I could see that Alicia was engaged and exhilarated by her linguistic accomplishment. She sat upright looking straight at Catherine, eyes wide, and responded quickly. When Catherine complimented her use of the expression, "catch attention," Alicia blushed. This was a good example of vocabulary learning through meaningful context.

Although students often studied vocabulary as a group, their vocabulary development with PBL was also very individualistic. Each time the students read an

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article in class, they reviewed the vocabulary together by looking up the definitions, discussing it in class, and practicing the pronunciation. Students also worked with new vocabulary as they wrote their articles. Study data suggest that throughout these activities different students developed their knowledge of different words. Lillia, for example, said she learned words related to famous people whereas Miriam said she learned words related to family. On the other hand, it was clear from Catherine's experience and reports in student final reflections that all of the students developed vocabulary in relation to the newsletter project. Catherine said:

> I think they learned new vocabulary. I think they got the language of the newspaper. (p.14)

In their final reflection, the majority of the participants demonstrated their ability to understand and answer most of the English language questions about the newsletter. For question two, "What did you learn about making a newsletter?," five participants responded in English with relevant comments. Although not always spelled correctly, students used a variety of English phrases and words. In comprehensible sentences, they used "communiquetion," "how is conformed the newsletter," "article," and "put in it a picture." For question three, "What are the steps for publishing a newsletter?" one female student responded with fairly sophisticated terms like *design*, *publication type*, and *border*:

> First step is looking for Microsoft Publisher in the computer. Start from a desing by publication type on Newsletters. Find Border Newsletter. (Final reflection, Sarai)

For question four, "What does each article need to include?," four participants responded in English and several participants used the words "Article," "Pictures," and "Copy." All

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but one participant seemed to have understood the English language question. Lastly, for question six, "How do you decide the layout of the newsletter," four out of seven participants demonstrated their understanding of the term "layout."

The final reflection was not meant to be a test of English. Nonetheless, the majority of students chose to respond in English. Their comprehension of the English language questions and written responses in English demonstrates some of their development of the "language of the newspaper" (Catherine, Final Interview, p.14).

Listening and Speaking Developments: Catherine's Class

Catherine's intermediate class developed their English comprehension skills through "a huge amount of listening practice" (Catherine, Final Interview p.14). However, the language input was not isolated; it included multiple one-on-one dialogues, class, and group discussions about authentic topics. The students did not role play or listen in order to answer discrete point comprehension questions. They listened and interacted in order to discuss personal topics and contemporary issues, plan and share ideas about their articles and the newsletter, gain instruction on the computer, edit their writing, and evaluate their work. Thus, students' improvements in English listening comprehension were apparent as they engaged in personal and newsletter related discussions, followed Catherine's directions on the computer, and responded to editing comments in their writing. In particular, class transcripts and teacher reports suggest increased student comprehension of newspaper language and "computerese". Students also said they felt more confident in general. Miriam expressed a new confidence in her ability to understand English speakers. She demonstrated this confidence as she

understood and responded to my interview questions in English (Final Interview p.4).

Lillia said that listening to English had become more automatic for her; she found herself able to listen and understand Catherine even while she was doing other tasks.

Student participants in Catherine's intermediate class further developed their English language speaking skills. They increased their usage of English in class and began using more complex English language utterances. Miriam who increased her overall English language fluency was the most striking example.

In Catherine's class, all of the participants improved their confidence ratings in the area of speaking on the final background questionnaires. Catherine explained that the students learned by doing. For example, they began conversing more in English as they worked on their articles.

> I think they improved their speaking by talking, by talking to you, by talking in class. You know we had very natural conversation and with each other (Final Interview p.14, Catherine).

> I found that when you presented an article. If you presented the article was in English and obviously they were all in English! You start to really use English. You know you could see the body language. They kind of organized -let's talk about this in English." (Final Interview p.16)

Catherine said she heard students doing much more "Spanglish" in their groups. The students were "dropping back and forth" with each other and one could hear "exchanges of phrases in English" (Final Interview p.14). This pattern of increasing fluency was confirmed in transcripts and observations of classes from July to August. A comparison of the second week of class (the first recorded classes) and the last week of class captures some of this increase in English language speaking. The following section compares transcripts from two classes in which I was present. In each of the classes students did a

combination of computer work and discussion. Both of the classes were recorded on two sided tapes of 120 minutes each, so equal time was allotted.

In the second week, on July 3, four different student participant voices could be heard on the recording. They used a mere 11 English words and employed about three times as many Spanish words, about 34 Spanish words. With the exception of one sentence, "Teacher it did not print it," all of the other English words on July 3 were response words such as "yes" and "yeah." In the last week on August 7, four different student participants were recorded. They employed about 75 English words. No Spanish was heard on August 7. The 75 English words were used primarily in phrases and sentences. In English, the student participants asked questions about the printing of the newsletter project, expressed happiness, talked about the pictures and colors in the newsletter, and evaluated their work positively. This glimpse of classes between the second and last week is fairly representative of the speaking trends observed by the teacher and myself. As the summer progressed, student participants used more English, less Spanish, and more complex English language utterances**.**

Most notably, class transcripts, observations, and teacher reports show Miriam speaking more English than she spoke in the first few weeks. Her fluency and the nature of the language she learned was apparent during her final interview. I began the interview in Spanish, but Miriam repeatedly initiated English language conversation. She used English to talk about her family, her homework, the teacher, the computer, second language learning strategies, and the newsletter. Some representative quotes are listed in Table 7.

Table 7: Miriam's English Speaking Development

FAMILY	And my, my son and my dawter. Sometimes they speake English wemi [with me]. And my husband makes me very happy and talk to me. He he talk to me. I like que tu te vayas [that you go] everyday a la [to the] school. My daughter help me.
HOMEWORK	Ella [she] help me in the in the <u>newspaper</u> and a buscar la [to find the] the sentence. She like it my homework.
TEACHER	La teacher la teacher [the teacher] And my teacher like it the program. The teacher she have (inaudible) everyday different The teacher Catherine. I really like it coming to this school with the teacher Catherine
COMPUTER	In my home tenemos [we have] computer. Using the computer Using the mouse Small letter
SECOND LANGUAGE STRATEGIES	In my home I,I see T.V. in English. I liki di programs in English. Yes. I am listen music? And I make (inaudible) in my car everyday I know. I know the same things in Spanish All the time I like it When the coming to the school and summer in everyday ah speak English The people speak English Read a book) I some time some time in the night. I, I read the book of my sons. Mom read my book, please. That's ok. I like it. I: wanted the new friends and the letters, typing letter.
NEWSLETTER	Newsletter this is cuando [when] my, my own letter Yes I like it. Congratulations.

It was clear from teacher reports and interview data, that Miriam was able to advance her

English language fluency noticeably. Her increased confidence in the area of English

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speaking is also reflected in the results of her initial and final background questionnaires. In the area of "Speaking English in class and with peers," she increased her overall confidence ratings. For example, for question number 17, "Discuss a class assignment in English with a partner," Miriam increased her rating from a "2," "Some chance but only with lots of help" to a "4, "Fairly Certain." Other students may not have had such dramatic changes, but class transcripts, observations, and final interviews suggest that students were speaking more English in class overall.

Reading: Catherine's Class

Catherine's intermediate class developed their English reading skills in three specific areas. These areas were interwoven with other skills. The first area was the ability to read English on the Internet. In the final background questionnaires, participants in the intermediate class improved their overall confidence rating for the section "Reading in English on the Internet" which contained the items:

> Read and comprehend the state standards for elementary school education,
> Conduct a search in English on the Internet,
> Search in English on the Internet for lessons to help my children in school,
> Read an English language web page,
> Select useful resources from an English web page,
> Navigate through an English website,
> Guess meansings in context in an English website,
> Interpret images in English language texts on theweb,
> Use images to understand English language texts on the web.

The average rating on this reading section in the initial questionnaire was 1.7 whereas the average rating in the final questionnaire was 3. Student confidence increases in these areas were reflective of work students had done searching, reading, evaluating, and selecting information from the Internet. In their final interviews, students said they felt

more comfortable searching for information on line. The developments they made in relation to selecting and evaluating material from the Internet were reflected in their newsletter project.

The second area was the ability to read the California standards for Kindergarten math. During class, students demonstrated their understanding of the standards in two ways. First, they discussed closely related lessons or tasks they could do with their children. Second, they summarized the state math standards in a collaborative computer document. Additionally, students expressed increased confidence in their ability to comprehend the standards. In the reading section on the background questionnaires, item number one asked students to rate their confidence in their ability to "read and comprehend the state standards for elementary school education." In Catherine's class, all but one student increased their rating on this section, and three of the increases were by more than a point. These results as well as other supporting data are discussed in more detail in the section "Teamwork, Higher Order Thinking, Strategy, and Content Development" because this area of reading is linked to student development of content knowledge.

The third area included two reading strategies reading for main idea and summarizing texts. It was apparent in class observations and transcripts that students had improved in these two related areas. Although both areas proved challenging for students in the beginning, they eventually demonstrated their ability to find the main idea of an article and to summarize the main points. Catherine explained in her final interview that they **"were starting to get on top of the main idea"** (p.15). One student even said in her final reflection that she thought finding the main idea was the easiest part of the

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newsletter process. Further detail on the use of these reading strategies is provided in the section"Teamwork, Higher Order Thinking, Strategy, and Content Development."

Writing Development: Catherine's Class

> This has been one of the most successful writing- everything kind of worked. (Catherine, Final Interview p.6)

Student participants had a "successful" writing experience in the intermediate class (Catherine, Final Interview, p.6). They gained a level of comfort and more fluency in their English language writing. They developed their English language writing at the sentence level in the areas of grammar, spelling, and mechanics. Participants also developed content, organizational, and discourse knowledge in relation to English language writing and the writing of articles in a newsletter. Most notably, the students developed the writing process skills of brainstorming, planning, self and peer editing, and writing on the computer. These developments are reflected in the newsletter.

At the start of the summer session, student participants in the intermediate class had trouble creating sentences. They had done little English language writing prior to the session. Miriam explained, "Yo no sabía escribir. Yo no sabía como hacer las oraciones" [I did not know how to write. I did not know how to make sentences] (Final Interview, p.7). However, after a number of weeks in which Catherine directed students through the writing process, students got more comfortable with English language writing. The English writing they did was not necessarily accurate but it was coming to them more easily. The writing fluency student participants developed is apparent in the quantity of sentence and paragraph level writing they produced. Their writing products included

multiple drafts of nine English language articles published in the newsletter, drafts of two unpublished articles, and various summaries of readings and computer related information. Lillia, for example, collaborated on writing three different articles,"Why it is important to learn English," "Why is the computer important" and "Salinas Offers Many Things." The students' overall writing output was remarkable given the fact that it was student initiated. Students had the choice to do other activites and were not being graded on their work. Although the students often had the opportunity to choose between writing and other tempting activities like surfing the Internet, playing games or doing language programs on the computer, they persisted in their writing.

Students grew comfortable writing in the English language. They stopped worrying about "perfecting" it (Catherine, Electronic Journal, July 16). This comfort was apparent in student responses to the final reflections. Although Catherine had encouraged students to reply to the reflections in Spanish or English, the majority of the students chose to respond in English. Four out of seven participants including Miriam answered all of the reflection questions in English, and one lower level student used mostly English. In the reflections, students wrote their ideas freely, creating sentences of their own and spelling phonetically. Their limited English did not stop them from communicating complex ideas. In response to the question, "What was the easiest part of the newsletter publishing process?" two students wrote, "Don't was easy bad we can do. [It wasn't easy but we can do it]. In response to the question, "What does each article need to include?," one participant communicated the idea that each article needs to be copied on the computer and that it does not need to be perfect: "The each article. To Copy of the computer a hot nidt include naty. Is Perft." [To copy on the computer it does not

need to include anything perfect]. A third student wrote, "Natin the Newsletter is PerFec" [Nothing in the Newsletter is perfect]. The emphasis on communication over perfection had an impression on students. They felt comfortable and fluent enough to volunteer a good deal of written information on the final reflections and to produce fairly complex sentences in English despite their lack of grammatical knowledge. They were also confident enough to produce a relatively large quantity of articles and to volunteer the articles for publication in a newsletter they knew would reach an audience outside the classroom.

In spite of their reduced worries about perfection, Catherine's students were actually developing their ability to polish their writing grammar and mechanics. The intermediate students made developments in English language grammar and mechanics as they were editing their articles. The working process of one female student, Alicia, illustrates how some of the grammatical developments were made. In July, Catherine met with Alicia to discuss her article on the General Education Development test (G.E.D.). Alicia's article had problems with definite articles, prepositions, passive voice, part of speech, tense choice, and past tense formation. Catherine did not make direct corrections on her work. The two talked through Alicia's ideas for a long time. Catherine gave some grammatical explanations. Alicia took notes and underlined parts of her article that Catherine had had trouble understanding or had asked her about. Then Alicia took the article home to revise it. She came back the next day with an impressive final draft. Table 8, "Grammatical Editing," illustrates some of the grammatical changes she made.

Table 8 Grammatical Editing

Grammar Point	First Draft	Revised Draft
Definite Article	I like the math.	I like math
Missing Subject	Thee months after finished the GED	Three months after I finished the GED
Part of Speech	Learning very good	Taught well
Passive Voice	I learned	I was taught
Past Tense Formation	Was study, was want, was go,	Studied, wanted, went,
Preposition	I like math and Mexico I learned very good.	I like math and in Mexico I was taught well
Tense	Arrive, not speak English	Arrived, didn't speak English
Word Order	When I to arrive this country	When I arrived to this country

Catherine said the changes Alicia made were a "huge improvement." She commented after seeing the article:

> "I was like yah! When I took it and read it last night, then I was like oh my God! She got it! She made the thoughts grammatically correct." (Class Transcript, July 24).

In her final reflection, Alicia wrote that she had learned "un poco más gramatica" [a little more grammar] thanks to her teacher and her classmates. Other students had similar experiences. In her final interview, Miriam reported learning how to write sentences. Lillia also said she learned how to improve her English grammar a little more.

In the area of writing mechanics, students developed their knowledge of punctuation and learned how to use the spell check on the computer. Lillia's work exemplifies some of the development. Lillia had done a fantastic job on her article "Salinas Offers Many Things," but her first draft had a number of run on sentences. Catherine told Lillia to, "Watch for putting in too many little words and when you can, finish a sentence and start another, rather than running too many thoughts into one."

Afterwards, Lillia rewrote her sentences (Catherine, Electronic Journal, July 16). The final article in the newsletter reflects her improvement. The article, which is eleven sentences long, has only one minor punctuation error. The intermediate students had difficulty with spelling, but they mastered the strategy of using spell check on the computer. Student hand written work was full of spelling errors in English as well as in the students' native language of Spanish. In contrast, the final computer generated newsletter has no spelling mistakes. Catherine says this was something students did by themselves.

> They started to recognize that if there was redlines [on the computer] they needed a spell check. So they did the spell check usually without me (Catherine, Final Interview p.5).

Furthermore, Catherine's students developed some knowledge of the discourse structure and content of articles and newsletters. They learned that it was necessary to include relevant titles with articles and to catch the reader's attention. They learned how to organize article material into paragraphs and bulleted or numbered lists. They also learned about the overall layout of newsletters. Students demonstrated this knowledge in their final newsletter project. They were able to articulate discourse knowledge in their final reflections as well. For example, Lillia wrote that an article needs to include a title, pictures, and good information. Her exact written words are as follows:

> *Yo aprendi durante el proseso de la noticia como organisar un periódico. Estamos aprendiendo a organisar una buena informacion que sea un buen contenido.*

> [During the process of the news [newsletter], I learned how to organize a newspaper. We are learning to organize good information that should have a good content.] (Lillia, Final Reflection, August 6)

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She explained that it was important to think about what to do first and to choose only "lo necessario" [the necessary]. Other student participants wrote about the importance of organizing the newsletter by theme and choosing pictures that were related to each article.

In addition, the students learned about different types of newsletters and newspapers. They read a variety of models and explored a variety of themes. They understood that they should select topics they liked and work together to plan the best content for the newsletter. Three students talked about this process in their final reflection. Lillia wrote the following (in exact words):

> *Desidimos que tipo de noticia queriamos aser como information y organizarlo buscar buenas fotos que conecten. Primero discutimos en equipo aserva de que queriamos aser y agararlo mejor de cada quien.*

> [We decided what type of news [newsletter] we wanted to do like "information" and organizing it search for good photographs that connect. First in teams we discussed about what we wanted to do and grab it better each one].

In regard to content, students learned that they could write articles based on their background knowledge or personal experience, but that it was important to check facts. They developed their knowledge of fact checking as they worked on their article content. One example is the article, "Salinas Offers Many Things." This article was put together by a group of students. They pooled their knowledge of where they lived to build a complete picture of the city. Catherine encouraged the students to exchange ideas and to use their background knowledge. But when she came across a discrepancy, she pointed it out. The students had written that Salinas was "80% Hispanic." At first, they did not understand the problem of using this number in their article; to anyone visiting their neighborhood the area looked to be at least 80 percent Hispanic. Then Catherine had

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Lillia and another student conduct research about the city on the Internet. The students soon realized that their personal observations were not true of the whole city. In the final copy of the article, Lillia changed the information to read, "65% of the people in Salinas are Hispanic" (Newsletter, p.2). In her final interview, she said she had learned that personal experience could be misleading and that it was important to check this type of fact.

The last and most evident type of writing development Catherine's students made was in the writing process skills of brainstorming, planning, and editing. The students learned that it was important to brainstorm and choose the main ideas of their articles before writing in detail. At first, the students were not able to distinguish between the details and main ideas. They sat down to compose detailed sentences before knowing the main topic of their article. Student also learned about finding the main ideas of articles and summarizing. At first, when Catherine asked the students about the main idea of their articles or to summarize things they had read, the students responded by telling her about specific details. Consequently, Catherine scaffolded students heavily in the art of brainstorming and summarizing main ideas. Over the course of the summer session, the students improved noticeably in the areas of brainstorming and summarzing.

By late July, students began demonstrating their understanding of brainstorming and of the concept of main ideas. They demonstrated comprehension of the process of throwing out ideas "off the top of your head," and they were able to state the main ideas of their articles with greater ease (Catherine, Class Transcript, July 23). They realized that brainstorming ideas first helped them to think. They also realized that it was important to filter out some ideas and to select the best and most central ideas before

writing. In regard to writing an article, Lillia wrote that she learned how to "pensarlo" [think about it] (Final Reflection). In her final reflection, she explained that for each article it is important to think about the contents and to choose the most essential and best information for publication. She wrote (in exact words):

> *Nesesitamos pensar que inclulla "to do" lo nesesario y que todo este bien para poder publicarla*
>
> [We need to think what to include "to do" what is necessary and that everything should be good so that we can publish it] (Lillia, Final Reflection)

With this knowledge of brainstorming and selection, students began to work with Catherine to plan their writing; to choose their main ideas, and to think about what information to include before composing sentences. They made decisions about which articles to keep and what to add. They also planned the overall layout of the newsletter arranging articles by themes. Students not only carried out the planning of their writing, but they were also able to articulate the planning process in their final reflections. In response to the question, "What are the steps for publishing a newsletter?" students expressed the importance of planning, organizing, evaluating, editing, and selecting content.

In addition, the students developed knowledge of the editing process. As they worked to rewrite their article drafts, they learned about different aspects of the editing process, and they gained experience with self and peer editing strategies. They learned that editing was not just something that a teacher did with a "red pen" (Catherine, Personal communication, Class Transctipt, July 23). Students edited alone, working one-on-one with Catherine, in pairs, in groups, and in class forums. They revised and reorganized content; corrected grammatical and mechanical errors; evaluated and revised

their titles and images in relation to the themes of their articles; adjusted the format of their articles to be attractive and to fit within the template; and modeled and remodeled the newsletter layout. Catherine, who had individual conferences with students about their articles, was impressed by how well they were able to understand and respond to her English language comments. On July 24, Alicia showed Catherine an article she had edited after their conference the previous day. Alicia had greatly improved the language, grammar, and organization of the article. Catherine was thrilled with the improvements.

After complimentiong Alicia on her great work, she asked Alicia about whether she could include something about the contents of the G.E.D. exam. Alicia responded by researching the test contents in an online site. Then she added a paragraph about the five subject areas in the test. Alicia really seemed to understand the editing process. She "got it!" (Catherine, Final Interview, p.5)

Students also developed the strategy of peer editing. Catherine explained how students worked together to edit their articles.

> In talking through articles students were able to figure out problem areas and clarify ideas so that they could rewrite and improve their articles to get a little clearer to rewrite (Catherine, Final Interview p.5).

The students tested the communicative affect of their English language articles upon one another.

The final newsletter is reflective of the different developments students made in English language writing. Overall, the newsletter is highly successful in its communicative intent. In the area of grammar and mechanics, the articles are not flawless, but the writing is very good for an intermediate level ESL class. The newsletter reveals some difficulties with typical intermediate level ESL writing problems:

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coherence, paragraph organization, word choice, verb tenses, article usage, parallelism in sentences; punctuation and capitalization, prepositions, and, in one case, paraphrasing. However, the errors are minor, occurring only two to four times each in the entire newsletter. The grammatical and mechanical mistakes are not significant enough to impede comprehension of the articles.

The language of the articles is clear and easy to read. Appropriate transition words are used. The verb forms are correct. The vocabulary is accurate, and the lexicon is varied. The content and discourse structure of the articles are equally impressive. Most of the article topics are well developed with complete and original ideas. There is little to no redundancy in the content. The article content is also unified, or focused on the main topic. Each article has a relevant title and one or two pictures related to the article theme. In addition, each article is formatted appropriately. The students used a variety of formatting techniques: paragraphs, questions and answers, numbers, and bulleted lists.

Second Language Strategies: Catherine's Class

Among the many second language and general learning strategies students employed, the data suggests that students were able to develop several metacognitive and cognitive strategies. These strategies are discussed in the following section. Before beginning the section, it is important to note that students may have developed more strategies than my data analysis suggests. Many areas of strategy development were ambiguous. For example, several students recalled the strategy of remembering the first letter of a new vocabulary word in order to learn it; however, there is no evidence of development, where the students are actually demonstrating procedural knowledge of the

strategy. In an effort to distinguish between the simple knowledge of strategies and the actual development of strategies, this section only focuses on those strategies for which evidence of knowledge and use is present.

Within the area of metacognitive strategies, the student participants in Catherine's class developed and applied their knowledge in the area of arranging and planning learning. First they developed and applied their knowledge of language learning. They read about language learning and talked as a class and in groups about ways to learn a language. Patricia summarized the class discussion and incorporated all of the ideas into her article, "Strategies for Learning English." Below are some of the items she included in her bulleted list.

- Listening and speaking more to improve pronunciation
- Watching T.V.
- Listening to the radio
- Reading books, newspapers, and magazines
- Using a computer to learn English

In her final interview, Miriam said she learned and was applying the strategies of

Listening and speaking more in class and with her children,
Watching T.V,
Listening to American music on the radio,
Reading a book with her children,
and using a computer to learn English.

Lillia said she"listened to the news on T.V." and "wanted to continue learning English through the computer." The students had understood the concept that language learning occurs through different types of practicing. As a result, they were pursuing more opportunities for practice.

Mid-session, Catherine reported and I noted that students were speaking more in class. In her final interview, Catherine said that students were talking more. She also said that she was able to see that they were listening actively because they were able to follow her directions and carry out tasks on the computer. Miriam said she practiced speaking English with her group members (Final Interview). Two other students said they had sought practice with Americans. Overall, the data show that students had learned about different means for language learning and were applying the strategy of listening and speaking more. This represents some development in the area of metacognitive strategies.

Within the area of cognitive strategies, the student participants in Catherine's class developed and applied their knowledge in the area "creating structure for input and output, summarizing" (Oxford, 1990, p. 47). As discussed in the section on Higher Order Thinking Skills, students developed their understanding of and ability to summarize. This also occurred as a reading strategy. Catherine worked extensively with students on the strategy of summarizing articles they had read. Overtime, they were able to respond with more facility about the main idea of their articles even as team members brought new ones into class. Catherine explained, "We were starting to get on top of the main idea" (Catherine, Final Interview, p.15). In her final reflection, Alicia said finding the main idea was the easiest part of making the newsletter.

Linguistic Gains: Amanda's Class

Like Catherine's class, student participants in Amanda's class developed a variety of English language skills. Amanda's students developed English Language

"computerese," vocabulary; some listening and speaking skills; and a little reading and writing. The next section discusses the development of each skill area in Amanda's class.

Computerese

Amanda discussed student development of "computerese" in her final interview.

> Now they know the language of the computer. They have been learning computerese. They did not know that before the beginning of the term (Amanda, Final Interview, p.11).

Students made noticeable improvements over the course of the summer. At the start of the session, participants reported and demonstrated little knowledge of English language computer terms. Mid-session, the participants reported learning a number of computer terms which the teacher had been using. These reports are illustrated in Table 9.

Table 9: Mid-Semester Formative Assessment July 17 Computerese Results

COMPUTERESE	X	X	12
1. computer terms			3
a. mouse		X	10
b. push		X	7
c. click		X	9
d. drag			2
e. enter			6
f. return			6
g. delete			5
h. underline	X		3
i. italics			3
j. font			2
k. style	X		4
l. center			3
m. print			5
n. copy	X		5
o. shut down			3
p. others	XXX		3

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Table 9 shows 10 out of 12 student participants said they learned the term "mouse," 9 out of 12 listed "click," half said they learned the terms, "enter" and "return; and 5 said they learned the words, "print," "copy," and "delete" [12.] .

After July 17, students further developed their knowledge of these and other English language computerese. Amanda began handing out vocabulary lists including the computerese that was needed for daily tasks. The students practiced saying the words at the beginning of each class. Students were writing them in their books and some were practicing at home. By the end of the session, it was clear that they had learned a number of the terms. In the lab, they could be heard using some English language computerese, and they were responding better to Amanda's English language directions. Amanda said they knew and could write the terms: *computer*, *mouse, monitor, Google search, font*, *desk top, size*, *and drag*. In the final formative assessment and reflection on August 6, students demonstrated their knowledge of the terms: *computer*, *mouse, monitor, Google search*, and *font* as well as of *print*, *copy*, and *images*. Of the 11 participants who completed the final formative assessment and reflection, 7 students matched these words to their Spanish counterparts with 99% to 100% accuracy. The remaining 4 students had 80 percent or more correct. Furthermore, 5 of the student participants named the computerese they had learned in the class during their final interviews. They mentioned many of the same terms as well as other words such as "keyboard" and "Internet." The triangulation of data on computerese development is evident as we look at the focus participants.

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[12] Table 9 "Mid-Semester Formative Assessment July 17 Computerese Results" is a simplified version of the data. A more detailed chart was used in the data analysis.

In her mid-semester formative assessment, Lupe reported learning the computerese: *mouse*, *push*, and *click*. Lupe, who began using the computer for the first time that summer, was also one of the 5 participants who matched computerese with 100% accuracy in the final assessment and reflection. She could be heard using English language computerese during the class sessions. In her final interview, she responded yes that she had learned the words *image, mouse, and keyboard*. She said she learned the words "text" and "copy." When I asked her what she had learned on the Internet, she explained that she knew how to search for images and told me, "Google, Google yo sé escribir en el." [Google, I know how to write in Google].

In the mid-semester formative assessment, Fernando reported learning the terms: *search*, *underline, style, center*, *print,* and *copy*. Fernando matched the computerese with 99% accuracy on the final assessment and reflection. For some reason, he skipped the word "font," but he was a primary translator for other computer terms and directions in the class. During his interview, he explained that he had learned many computer terms in the class.

> *Fernando: sobre la computadora aprendí mucho, in the **computer**, in this summer. **Draw, type, go to the internet, computer windows**. "**I look the pictures**," porque yo no sabía mirar esas cosas, ahora yo ya las puedo mirar.*
> *R: You know how to find the pictures and copy them? Y ¿usted aprendió algunas palabras en inglés? por ejemplo el ratón, el mouse.*
> *Fernando: yo aprendí. Aprendí **view, write, type, what size the word,** y algunas más palabras aprendi. Todo [eso este verano.] todas esas palabras aprendí.*
> *R: [todo eso este verano] y ¿usted aprendió a escribir en la computadora algunas palabras?*

> [Fernando: I learned alot on the computer, "in the **computer**, in this summer. **Draw, type, go to the internet, computer windows. I look the pictures**," because I did not know how to look at these things, now I can already look at them.

R: "You know how to find the pictures and copy them?" And did you learn some words in English? For example, el ratón, "**the Mouse.**"
Fernando: I learned. I learned "**view, write, type, what size the Word,**" and some more words I learned. Everything [this summer] all these words I learned.
R: [all this this summer] and did you learn to write some words on the computer?]
(Final Interview, p.2)

From the lower level students like Lupe to the higher level students like Fernando, everyone seemed to have learned some computerese.

Vocabulary: Amanda's Class

In the beginning class, students developed vocabulary related to teamwork, content of their projects, routine conversational language, and class activities. After July 17, Amanda used bilingual Spanish-English worksheets to review vocabulary. Like the computerese development, evidence of student vocabulary development emerged across instruments: formative assessments, book projects, final interviews, and final reflections. The results of each of these instruments on their own do not confirm the learning of that vocabulary, but taken together the data does point to a good amount of lexical development.

In the first formative assessment of July 17, participants reported learning a list of math, teamwork, stretch, and Google search word (The stretch words were actually phrases Amanda used everyday to guide students in physical exercises before working on the computers). In the assessment, the question, "What English vocabulary have you learned?" was followed by a list of the words. Students selected the words they felt they had learned and circled them or wrote them in. They also wrote in other words or skipped the question all together depending on what they felt they knew. All 12 participants

completing the form reported learning some English vocabulary. More than half of the students said they learned English language colors, which were reviewed during a math activity in the first two classes. 5 out of 12 students also remembered the words "count," "sort," and "divide" from the same math activity. Seven students said they learned the word "distribute." Less than half the students remembered learning the remaining words. Table 10, "Summary Response to Formative Assessment," shows the words that Lupe and Fernando said they learned and the total number of students who reported learning each word.

Table 10: Summary of Formative Assessment July 17 Vocabulary Results

NAMES :	Fernando	Lupe	TOTAL
VOCAB	**X**	**X**	**12**
1. math words			5
a. count			5
b. sort			5
c. distribute			7
d. divide			5
2. colors			5
a. yellow		X	9
b. red			6
c. blue		X	7
d. green		X	7
e. pink			5
3. team-work words			2
a. teams			2
b. chair-person	X		5
c. speaker			2
d. timer			4
4. stretch words			2
a. roll shoulders forward			2
c. back-ward			2
d. shake hands			3
e. look close			3
f. look far			2
g. other			1
5. Google search words			2
a. Mickey Mouse.			3
b. elephant			2
c. horse			2
d. others	XXX	X	4

As shown in Table 10, Lupe said she learned the colors, *yellow, blue*, and *green*, and the word "*directions*." Fernando said he had learned the words, *recipes, cinnamon, choose*, and *chairperson*[14].

Additionallty, in their final formative assessments of August 6, 11 participants demonstrated knowledge of routine words and phrases, teamwork vocabulary, and question words. As illustrated in Table 11, the majority of the participants completing the form where able to correctly match the words and phrases to their Spanish translation.[15] These words were used on a daily basis and students were for the most part able to recognize and translate them.

Table 11: Final Formative Assessment August 6 Vocabulary

Words and Phrases	Number of students who correctly matched item to Spanish translation
Chairperson	9
Group	11
See you Wednesday	10
Please Sign my Book	11
What	11
When	7
Where	9

Interestingly, half the students completing the final reflection chose to repond in English. They came up with and employed a range of English language words and

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14 Table 10 "Summary of Formative Assessment July 17 Vocabulary Results" is a simplified version of the data. A more detailed chart was used in the data analysis.

15 Table 11 "Final Formative Assessment Vocabulary" is a simplified version of the data. A more detailed chart was used in the data analysis.

phrases including the vocabulary items: *computer*, *groups*, *programs*, *help*, *change*, *fon*t, *size*, *print*, and *copy*. Fernando wrote four English sentences and one phrase.

Most of the participants interviewed said they had learned more vocabulary. Fernando said he learned more vocabulary as he was helping his classmates. He said he learned words such as "he," "she," "children," and "play" and that he learned how to ask questions (p.5). In addition, Fernando demonstrated his knowledge of a number of words. He correctly employed the words "chairperson," "speaker," "partner," and "group" and the phrase "maybe help with their homework" (pp.1-5). During her interview, Lupe said she had learned "varias palabras" [various words]. She reported knowing the words "answering," "finish," and "question" and she translated them into Spanish to show me (p.1). Lupe also developed her knowledge of English language words as she conducted searchers on the Internet. On July 24, she asked how to say "bolsa" [purse] and typed in "purse" for her book page on the shopping theme.

A variety of English language vocabulary is used in the book projects. On the one hand, some of the English language vocabulary is directly copied from the worksheets; thus, the presence of the vocabulary does not necessarily indicate learning. On the other hand, copying was one way to begin to develop knowledge of the vocabulary. Also, students did use and select certain words in ways that indicate comprehension and, in some cases, learning. For example, at the beginning of the summer session, team members chose English language team names: the "Wariors," "Participants," and "Neighbors." At the end of session, they put these names on the covers of their book projects along with the the Spanish translation, the word "group," and a related picture (See "Sample Cover," Appendix U1). Students explained that they had selected the

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name"Warriors" because they were strong, the name "Participants" because of the research study, and the name"Neighbors" because they were always sitting next to each other. It was clear that they had learned these words. They had been using them all session for appropriate reasons. Plus, their Spanish translations and pictures showed that they understood their meaning.

Student generated glossaries in the back of each book were also indicative of a certain amount of vocabulary development. To create the glossaries, students were asked to go through the handouts from the entire summer session and choose words that would help them teach their children. The word "glossary" was discussed at length and students were instructed to create one of their own. Fernando found and copied a picture of a child studying with a dictionary. He centered the word, "Glossary" in large type. Then he wrote and correctly translated into Spanish 22 English language words (See "Sample Glossary" Appendix U6). Fernando had an opportunity to develop his knowledge of quite a few words during this activity and the proceeding lessons in which the words were used.

Overall, the combined data in this study indicates a good amount of development in the area of English language vocabulary. Students expanded their knowledge of vocabulary related to the project theme of helping their children with math, teamwork, routine conversation, and class activities.

Reading sentences and Reading Aloud: Amanda's Class

Student participants in the beginning class developed sentence level reading skills in relation to their English and Spanish language worksheets and handouts. Amanda said

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they knew how to read and comprehend the "what" and "how" questions she was constantly asking in these worksheets (Final Interview, p.13). Students reported reading and learning from these worksheets as well. Fernando said it was easy to read the worksheets because they were translated in English and Spanish. He said, "I learned too much." For Fernando and the other student participants "reading" meant reading aloud. The students frequently read the English language worksheet aloud in their groups. The reading was a way "to pronounce the words and write the all letter" (Fernando, Final Interview, p1).

Listening Developments: Amanda's Class

Students developed their ability to recognize certain words and to better understand English language instructions in class. Lupe said that she understood more or less what Amanda said in English, that she had learned various words, and that she understood better now what people were saying to her in English. Lupe's listening development and that of other students is apparent in some of the class transcripts. First of all, the number of students translating Amanda's words into Spanish increased over time. At first, only two students were doing the translating. Later at least five other students were involved in helping with the translations. Aricela, Arturo, Fernando, Lupe, Javier, Martin, and others could all be heard translating at different times. Their ability to translate Amanda's English into Spanish was a demonstration of their listening comprehension. The absence of translation was another indicator of students developing English language listening comprehension. Students improved their ability to understand Amanda in English. For example, in the last two classes, she was able to teach the

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students how to make book covers and how to collate the book pages. These tasks were completed without bilingual assistance (from the coordinator or lab assistant) or translated worksheets and with little Spanish translation on the students' part.

Speaking Developments: Amanda's Class

Student participants in Amanda's class developed their English language speaking skills. They learned how to pronounce and use new words, they remembered and learned how to say words they already knew, and they gained more comfort in speaking English in general. In particular students learned to ask questions and say phrases that were routinely used in class. Amanda said they learned the question words she was constantly using "What" and "Why" (Final Interview, p.13). Likewise, Fernando reported and demonstrated his ability to ask questions in English. Other students clearly caught onto the phrases Amanda used everyday, "See you Wednesday" and "Please Sign my book" were favorites. In August, it was the students who could be heard calling out these phrases at the end of class. At the same time, students further developed their pre-existing linguistic knowledge. In their final interviews, three beginning students said words they already knew came back to them over the summer. They said they were able to improve their knowledge of these words by practicing them in the class. Student participants reported feeling comfortable practicing English in class and in groups. They developed some ease with speaking aloud during class discussions. By late July, Amanda noticed that more students were speaking more English in Class.

Correspondingly, a number of longer English conversations appear in the transcripts in the last two weeks. On July 31, Amanda discussed the project theme with

students almost entirely in English. On August 6, several students spoke with Amanda and gave their opinions of the lab in English. These exchanges represent relatively complex English language dialogue. The exchanges are a contrast to the first few weeks when participation in English was heavily scaffoled with translation and most of the students spoke English only to answer short questions. After the session, Amanda recalled how at the start of the summer few students were speaking or registering what she was saying. The students had improved their English speaking abilities since then.

> They feel more comfortable using English. They are actually speaking a little bit. And when I got there they weren't speaking at all. And because they were all in immersion. And when I started PBL I really only had one person who would speak at all. And my beginners the ones that had no English experience, they would just like look at me like deer in the headlights and a lot of those people in my other classes. You always get those people who never spoke English and they stay for a few times and then you never see them again. But these people because of PBL have hung in there the whole entire time. And now people are excited. They walk out after class and they say, uhh, what are you saying? ((laughing)) And oh, Alicia last week she like bounced up to me and she was really happy and she went, "I'm printing!" ((Amanda claps, sighs happily)). She couldn't do that a month ago. She couldn't do that before PBL, she couldn't do it! And last night, she walked up and she went, "Please sign my book!" ((laughing)) (Final Interview, p.14)

It was clear to Amanda that students were comfortable speaking English in class. Even Alicia, who was previously unhappy in the class, was showing delight in the English expressions she had learned to say. .

Small Writing Developments: Amanda's Class

Some student participants in Amanda's class demonstrated developments in their ability to write English. Others were working simultaneously on their Spanish and English language literacy. Amanda said some students were writing more sentences in

English. Lupe said she had learned how to write more words in English over the summer. These developments are apparent in student formative assessments, class work, and book pages. For example, half the student participants chose to use written English in the final formative assessment and reflections on August 6 whereas no students used written English in the mid-session formative assessment and course evaluation on July 17. An analysis of student worksheets and computer generated responses to the worksheets shows some increases in the usage of English language words in their written work. Some of the linguistic progression in Fernando and Lupes' work is described in Table 12, "Writing in Book Projects." As shown in Table 12, Fernando incorporated more English words into his last two computer generated responses than they did in the first (See Appendix U3). For the first computer response, Fernando copied English questions from the class worksheet, but he answered all of the questions in Spanish. For the second two computer responses, all of his responses were in English and he wrote several original English language phrases. Lupe made some improvements as well.

Table 12: Writing in Book Projects

ITEM	Date	Lupe	Fernando
Computer generated response to <u>Recipe Worksheet</u>	7/16	<u>O words</u>. Picture only	<u>20 English words copied</u> Responses to worksheet questions all<u> in Spanish</u> English sentence fragment and illogical word combination.
Computer generated response to <u>Budget Worksheet</u>	7/23	<u>5 English words copied</u> First part of worksheet copied in Spanish No capitalization or punctuation.	<u>95 English words original and copied</u> Seven English sentences copied from worksheet and seven original sentences. <u>No Spanish</u>.
Computer generated response to <u>Shopping Worksheet</u>	7/24	<u>9 English words copied</u> One question copied from worksheet and <u>2 original sentences in Spanish.</u> Some correct punctuation and capitalization	<u>47 English words orginal and copied</u> English title and three questions copied from worksheet and three original answers. <u>No Spanish</u>

Lupe's written work represents a different level of development than that of Fernando. Like many other students, Lupe was working on basic literacy skills. To understand her work, one has to look at the overall progression.

Lupe had a low start. She was not able to finish the recipe and budget worksheets of July 16 and July 23. In her computer generated responses to these worksheets, Lupe

simply copied parts of questions in Spanish from the worksheets. As indicated in Table 12, she used no punctuation and almost no capitalization in her July 16 and 23 responses. For these pages, she also had her team members help her find and copy images in Google. These first book pages show that Lupe was struggling with basic typing and word processing skills and not necessarily connecting with the language or content (See Appendix U4). However, for her response to the shopping worksheet on July 24, Lupe was able to put more thought into the communicative meaning and the language itself (Lupe's "Shopping Response" appears in Appendix U5). For the shopping theme, Lupe completed the entire worksheet with three answers in English and two in Spanish. For her computer generated response to the worksheet, "Usando cupones con los niños para comprar" [Using Cupones with your kids for shopping], Lupe wrote and centered the complete title in Spanish. Instead of copying all the questions from the worksheet, she chose the principal question, "How can you teach this math to our kids?" She wrote the question correctly in Spanish and English. Then Lupe asked another student about the word for "bolsa" [purse]. She carefully typed the word into the Google search engine and copied an original image of a hand bag to go with the shopping theme. Next, Lupe created two response sentences of her own. She wrote, "Los yvo a la tienda" [I bring them to the store] and "m parar precios" [compare prices]. Lupe still did not have any punctuation, but she correctly capitalized the first letter of the question and each of her sentences.

Most interestingly, Lupe edited her answer on the shopping worksheet before putting them into her July 24 computer document. She changed the order of her sentences to be more logical, made the singular form "lo" [him] into the plural form "los" [they],

separated the words "lo" [him] and "llevo" [bring] which she had run together, and corrected her spelling of the words "llevo" [bring] and tienda [store]. Although typos in the document suggest Lupe's continued difficulty with word processing, the document reflects her development in the area of mechanics and editing and demonstrates a good comprehension of the lesson content.

Difficulties of Assessment

As has been frequently reported in the literature on PBL, the assessment of projects is challenging. In the case of Amanda's class, it is difficult to trace developments through the book projects because of the variation in time on task, interdisciplinary foci, and collaborative nature of the production. Because of the class circumstances and student centered nature of instruction, time allotted for tasks was irregular and often unpredictable. Although students had teams, the transient and open nature of the class was such that the members were constantly shifting and interacting between groups. Thus, even group assessment would have been difficult. Moreover, since students were engaged in whole language tasks, the completion of assignments entailed multiple skills. Lupe's writing, for example, cannot be measured fully on its own since her ability to compose sentences was also dependent on her typing and word processing skills and on how well she worked with her team members to get help. Also at play was student ability to deal with the class circumstances, or problems of the day. For example, on July 23, the labs were not ready and after beginning late many of the students were not able to finish their work. Lupe who became very good at getting help from others was able to finish.

But the completion and quality of written work on that day was interwoven with many other factors.

Even without the class circumstances and team issues, the analysis of a single book page is complex. Each page represents a variety of skills within the areas: content, computers, and English. Applying a number system to these items proved complex because certain items such as the quality of a title or how well a students answered a question need to be rated on a scale whereas other items such as the quantity of typing or of English language words need to be rated with a point system. Furthermore, the wide range in production quality between students like Fernando and Lupe makes it difficult to assign appropriate number scales. With a traditional 100 point grading scale, Lupe fell well below an "F" and Fernando well above an "A." The letters did not represent the true state of their development. The process of analyzing the book pages, revealed the complexity of measuring writing development in whole language setting. It confirms other reports in the literature about the difficulty of assessment.

Second Language Learning Strategies: Amanda's Class

> They really were not self-sufficient in the most basic. (Amanda, Final Interview, p.11)

Student participants in the beginning class developed cognitive, social, and compensation strategies. They developed the strategy of translation. They improved their group work strategies and learned organizational tactics like assigning roles to team members. They also expanded the ways and frequency in which they asked for help and sought clarification. These same participants who sat alone and quiet waiting for their

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teacher in that first week of class later began to mill noisily around the room. Mid-session, they we working in teams, using the computers by themselves, assimilating new students into their groups, asking one another for help, engaging in translation, and speaking up in class when they had a question. These participants, who shocked me with their passivity and drove their teacher "nerviosa" [anxious] with their dependency in the first weeks of class (Bertha, Final Interview, p.4), became much more active participants in their own learning.

INSTRUCTIONAL CHALLENGES

Previous research on project based learning points to a number of instructional challenges. The instructional challenges teachers in this study faced fall into three categories: methodological challenges, challenges relating to the specific classroom circumstances and student population, and one challenge relating to second language education. These challenges were not insurmountable. Surprisingly, the teachers also spoke of non-challenges relating to the work load, methodological conveniences, and high points of PBL.

The methodological challenges included the basic adjustment to a new method and all its unknowns, putting the theory and method components into practice, and dealing with project logistics. The creation of formative assessment and reflections also proved somewhat challenging. Most of these problems including the formative assessment were initial challenges that the teachers were able to resolve in much the same way previous teachers of other disciplines have described (Polman, J, 2000).

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Adjusting to a New Method

After the training period, the teachers naturally had some adaptation time. In her

final interview Catherine said:

New methods make resistant at beginning. I kind of have to kick and scream a little bit and often I kick and scream I settle down and I'm really good (smiling and laughing). I'm on board yah! (p. 8)

Reflecting on the training period, Amanda wrote:

I remember sitting in that initial meeting when I first met you really liking you and not wanting to disappoint you or Rose with the performance of my class. I truly didn't know how we were or even if and probably wouldn't be able to pull this off on any level. Much less come out of this with a book, because they were multi-level, resistant and has so few skills (Electronic Journal, July 29).

Catherine captured the initial feelings of uncertainty in an early planning e-mail:

Ok, I would like to, do an introduction to them, I feel like I should do that, it's either going to be interesting or it's going to suck (Electronic Journal, July 2).

Basically, there were many unknowns. The planning "wasn't straightforward or

predictable" (Final Interview p.3, Catherine). The teachers did not have the security that

comes with implementing a tried and true lesson; every day was an experiment. At times

it was overwhelming and nerve racking. On June 28, the Coordinator, Rose commented.

It is so hard to do "ground-breaking" work without feeling totally overwhelmed and intimidated. We must be doing something exceptional because we are all so very nervous! (Electronic Message)

Putting Theory into Practice

Equally important was the challenge of putting all the theory and instructional

features into practice. In particular, the teachers dealt with the problems of finding the

right project, integrating project activities into a class routine, striking a balance between

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letting go and dominating or scaffolding to the right degree, knowing when to do skill development, and organizing students in and out of groups.

Rose had worked with me prior to the project to develop some possible problem themes for the PBL lessons. She wanted the teachers to focus on a project which would enable the students to help their children in school. She felt strongly that math would be the best area to work on both because there is a need for it and because that would be an area parents might be able to work on with their children despite their lack of English language skills. However, math was not a favorite of the teachers. The math framework appeared "boring" at first. Higher levels of math such as algebra were not necessarily within their many other expertise. Furthermore, both teachers were concerned about the fact that many of their students were not parents. Catherine explained, "I was really concerned with not wanting to alienate the non- parents" (Final Interview, p.9). Ultimately, the teachers had to balance the coordinator's agenda and program focus with the needs and interests of the students, the PBL goals, and constraints of their classroom circumstances.

Once a project theme had been decided, they had to figure out how to break the project down into manageable tasks and to fit the tasks into some sort of classroom routine. The teachers also struggled initially with their role as facilitators. One issue was when to do skill development. As Catherine explained, certain skills needed "to be taught in isolation before they can do that project" (Final Interview p10). Other skills could be learned as they were doing. In Amanda's class students needed very basic computer skills like turning the computer on, entering and closing a program, and using a mouse. They also needed basic typing and word processing skills. These had to be covered before

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students could produce material for their book project. On the other hand, they could improve their knowledge of the English language keyboard and further their typing and word processing skills as they worked on the books. Other challenges included: leading without dominating, letting go without being tricky, and giving students ownership while keeping things doable. On July 22, Catherine wrote,

> I'm not understanding how much to scaffold and how much to let happen. I feel like they need a solid understanding of the framework before (at least a base to begin with).

Amanda struggled with planning versus going with the flow. Her tendency was to "go with the flow" and let students direct the process as much as possible. However, things seemed to be getting a little out of hand because of the unpredictability of her classroom situation. On July 19, I counseled her to develop more scaffolds for the students and to step up her facilitator role by managing the time and sequence of activities.

By mid-July the teachers seemed to be facilitating artfully and the students had become "independent." Subsequently, a new challenge emerged: the challenge of detaching students from their projects and regrouping the class after teamwork activities. This challenge was a joy for the teachers. They saw it as a display of student enjoyment and engagement. A twenty plus minute expert from Catherine's July 23 class illustrates the delightful nature of the "detaching and regrouping" challenge.

> C: Oh, writers (laughing)! My poor writers! ((laughing)). Oh, just a quick meeting writing team, Miriam, Miriam (laughing). I swear just til 2pm and then you can go back! ((laughing)) Miriam's like ((gesturing with struggling sounds, laughing)). I promise you can go back! ((Sarai and other female talking to each other))
> SF3: Las preguntas, quanto tiempo [The questions, how much time-]
> C: Hello, hello! ((laughing)) ((talking in background))Yes, yes.
> R: You can put all the information here if you want.

C: Seriously, Miriam and Monica. You don't have to be done. Leave it on the computer, don't even close anything. All I wanted to do and I want to do it while Rebekah was here and also just because I want you to start getting a vision – over here- come over ((gesturing and laughing at fact that students are too engaged to come over)). Miriam! ((laughing)) Miriam ((laughing)). I'm really excited about your computer enthusiasm. Okay, Alicia. No one has to click. Everyone will return back to their work. But what I wanted to show you ((students talking in background)).
Sarai: What happened with this one?
C: I haven't turned them in yet. I will give them to you next week (laughing) I will give you the results ((laughing)). Oh, I'm already seeing inertia, alright. Don't close don't worry about anything. Those are no's and those are yah's. Patricia turn that top off for me. ((students finally come to the table))
C: First of all, ((students whispering)) and this goes without saying, your work and the writing, everyone is very focused. ((students whispering)). Elsi, can you see okay? Or do you want to come over here and sit here between Lillia and Sarai? I don't want you to be isolated. Come squeeze in here, okay.

This rare display of "inertia" in Catherine's class, the refusal to stop their projects, was a challenge both teachers delighted in towards the end of the session.

Project Logistics

Working on the Internet proved difficult. Catherine wondered how to scaffold students work in such a vast arena. Most of Amanda's students had rarely if ever seen the World Wide Web. Catherine confronted the issues of working between two programs: Microsoft word and Publisher and the difficulty of merging student articles into one document. After a long struggle to find just the right project theme, I unabashedly cheered Catherine on. She reeled me back in with the hard reality: "My dilemma is now of how to actually create the Newsletter" (Electronic Message July 16). The practical logistics were complex and stressful at times. On July 31, Catherine wrote that she knew there would be bugs because there always were [in projects] (Electronic Message).

Catherine summarized some of the logistical challenges in her interview:

I think sometimes there's just some logistics of implementation ((pause)).
I think there's a certain space needed. There's a certainness needed. This group
was a uniform level of English. And it's harder with multilevel. And the number I
had made it really workable.

It's hard though because you have to come up with the idea. And what I said
about this class was that it was easy but initially it was hard because there was a
lot of little things like, Did they had enough skills? But they got enough
confidence that they were okay to do stuff. (Final Interview, p.18)

Interwoven in the logistical demands were the pressures to finish and to finish on time.

The students were counting on finishing. The coordinator was strongly encouraging it.

Both teachers wanted the students to have the feeling of success and completion. At the

same time, there were many unknowns: whether there would be bugs in the process,

whether the computers would perform, if the students would show to class, if the teachers

could predict the time it would take to complete each part of the project. Naturally, this

caused some stress. On July 16, Catherine wrote:

I have to balance my determination to get this thing published without being a
complete maniac and making sure it is meaningful to the students and truly
authentic and reflective of them. They are the instruments of the process.
(Electronic Journal)

It was stressful not knowing when the class would finish and if the students would like it.

Classroom Circumstances

Other challenges the teachers experienced were specific to their circumstances

and not necessarily part of PBL. The teachers in CBET had to deal with the challenges of

open enrollment. Each class had students with mixture of English and computer levels

with students who had different lengths of time in the program. Amanda had an

extremely transient class. Catherine was enjoying working on the projects with old students and eager to move them along, but she felt bad about leaving new students out. For Amanda's class, it was literally impossible for her to single handedly teach, monitor, and assimilate the floods of unexpected newcomers every night. There were also some difficulties because of the lack of skills. Students needed to have more skills than they had to be able to start the projects. Catherine struggled with teaching students higher order thinking skills such as brainstorming, summarizing, and planning. The program used to publish their newsletter project was also entirely new. In Amanda's class, many students lacked basic computer skills and language learning strategies. A number had no formal education and difficulty reading and writing in their native Spanish language. They were also exhausted after long days working in the field. Furthermore, Amanda confronted exceptional circumstantial challenges in her classroom (See, "Challenging Circumstances: Houston! We have a Problem!).

The competing demands of Amanda's class and the transient nature of both classes were actually addressed well through instructional aspects of PBL. Organized teamwork, student centered instruction, and the emphasis on enabling students to become self-sufficient, all helped to address issues of a transient classroom. For example, in the beginning class, teams got in the habit of assimilating newcomers and updating them on activities. Tasks such as signing students in, translating, and assisting others on the computer were distributed among students. In the intermediate class, the teacher dealt with the influx of new students by assigning mini student centered projects. While the group of old students was engaged in the creation of their newsletter, new students could

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be seen researching information of particular interest on the Internet, or completing a task on the computer.

Second Language Specific Challenges

Previous studies on project based learning in second language acquisition suggest possible second language specific challenges (Eyring, 1989, Beckett, 1997). This study provides little support for such claims. The teachers in this study experienced one challenge relating to the traditional teacher role in the second language student culture, but the challenge was resolved in much the same way it has been in previous studies outside second language acquisition. The classes experienced other challenges relating to the language barrier; however, for the goal of language learning, the language barrier was more of a benefit.

In the area of culture, both teachers mentioned at the beginning that many of their Mexican students were accustomed to teachers having a more authoritarian role. The teachers said they would need to put some effort into getting the students to work on their own. However, by mid-semester the students had clearly developed a strong sense of self-sufficiency. Student independence was apparent during class observations and repeatedly reported by teachers in their electronic journals, informal meetings, and final teacher interviews (See "Independence, Pride, and Ownership"). Like students in previous studies of project based learning in disciplines in and outside second language, the students in this study were able to develop independence over the course of the class session.

In the area of language, teachers mentioned the difficulty of not speaking the students' native language, Spanish. In their formative assessments, students in the beginning class expressed a desire for more Spanish explanation. The language barrier made things harder from the logistical point of view. It made giving and comprehending directions and explanations more difficult. It also made it harder for teachers to check in with students. Without Spanish, it was difficult for the teachers to communicate in depth with students about how they were doing and feeling. Both teachers were eager to get feedback and relieved when information from assessments and interviews was translated into English: the not knowing had added another layer of stress. In this sense, PBL might be easier in other disciplines where the teacher and students speak a common language. On the other hand, PBL has often been done with children. Getting in depth feedback from young children might pose similar challenges in cases where children are not yet mature enough to understand and articulate their feelings. It should also be noted that although both teachers in the study said they did not speak Spanish, class transcripts show them picking up a few Spanish words and phrases and understanding quite a bit of Spanish as they went along. The language learning was not unidirectional.

Furthermore, from the standpoint of language learning not having teachers who spoke Spanish was constructive. It offered many opportunities for negotiated interaction; students were forced to speak English and to persist until language was accurate and clear enough to be understood. Moreover, in the beginning class, difficulties posed by the language barrier led the teacher and students to employ language learning strategies. Two strategies that were employed included the previewing of English language vocabulary and organizing of language tasks. The beginning level teacher developed bilingual

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worksheets with vocabulary needed for the day and step by step instructions. These worksheets offered studens the opportunity to practice English language vocabulary. While in groups, students could be heard reading aloud and practicing English language words on the worksheets. The worksheets were not only a system for organizing the class, but also a language learning stimulus and tool. Another strategy that was employed was translation. Translation was useful for language learning because it allowed even the novice English speakers to get involved in English language discussions. At the same time, student interpreters had the opportunity to practice English and increase their English language fluency as they were translating. In summary, the lack of a common language was impetus for language practice, the application of language learning strategies, and negotiated interaction. From the point of view of language learning, the language barrier was, therefore, more of a benefit than a challenge. Thus, this study does not yield any evidence of second language specific challenges of any significant burden or that were irresolvable. Instead, an unexpected theme emerged in the teacher reports: the theme of "non-challenges."

Non-Challenges Specific to the ESL Population

Contrary to previous studies in second language, the ESL population in this study did not prove to be a more difficult population in which to apply project based learning (PBL). In fact, the predominantly Mexican culture of the students facilitated the implementation of PBL because the notion of working collaboratively came very naturally to the student participants. The ESL participants all expressed positive attitudes towards group work activities in their responses to the formative assessments, reflections,

and interviews. They were "acostumbrado" [accustomed] to group work. Arturo explained:

> Arturo: pues siempre en mi vida todo lo he trabajado en grupo, sí es de religión siempre es en grupo porque intercambias impresiones uno con otro.

> [Arturo: Well, in my life I have always worked in groups, if it is religion it is always in groups because you can exchange impressions with one another.] (Final Interview, p.2)

Non-Challenge: General

Surprisingly, Catherine and Amanda both noted a number of general non-challenges relating to PBL. Both teachers expressed positive emotions and the desire to continue using the method. Catherine noted in her interview that PBL was less work. She said that PBL required more thinking, but it was not more work than other classes. She said there was less to prepare because the classes were so unpredictable. Catherine also expressed the joy of being able to work individually with students on their articles while others worked collaboratively on their projects. She suggested that this was a better way to teach writing.

Similarly, Amanda found that PBL helped to resolve a number of classroom problems. Prior to the implementation of PBL, Amanda's class was a teaching nightmare: resistant students, student of mixed backgrounds and levels, frequent interruptions, unreliable computers, and an unpredictable classroom environment. After the implementation of PBL, the classroom situation got more manageable. She was no longer being spread thin running around to attend to administrative responsibilities and from student to student. Instead, students were working independently in groups, helping one another, and taking on responsibilities in the classroom. For example, students became

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responsible for addressing the constant influx of new students thereby eliminating frequent interruptions to the teacher's instruction. One elected student would help the new students do their registration paper work and another, usually a team leader, would assimilate new students into their groups and up date them on what was being done in the class. Amanda was delighted with the changes. Her journals and conversations were punctuated by moments of joy and excitement.

> Today was fabulous! (July 29, Electronic Message)
> At week 6, they became independent! (After class Meeting, July 30)
> I love teaching this way! (Informal Meeting, July 31).

Amanda and Catherine both wanted to continue teaching with PBL. Amanda talked about doing a cookbook or newsletter, or making a story board. She wanted to brainstorm future ideas with her students. Catherine said she wanted to do a Power Point project with her beginning students.

PARTICIPANT RESPONSES TO FORMATIVE ASSESSMENT AND REFLECTION

Teacher Response

Despite the very different class situations, teaching styles, and backgrounds of the two teacher participants, Amanda and Catherine responded to the formative assessment and reflection components in similar ways. In both classes, formative assessments were combined with reflections. Both teachers responded to the idea of formative assessment with some initial bewilderment, concern about judgment, and slight resistance. These initial problems were eventually resolved through electronic messaging and informal conversations. Analysis of teacher electronic journals, field notes, and interviews also

provided insight into some of the teachers' reasons for resisting or delaying the formative assessment and the main issues around the assessment.

Catherine had three reasons for postponing the formative assessments. One, she had mixed feelings about the formative assessment model I had created; two, she wanted to make sure there was time to finish the newsletter; and three, there was a wave of absences the first time we planned to administer the formative assessment. Likewise, Amanda was unsure how the initial examples I provided fit with her class. She was too busy at first to make her own formative assessment.

The teacher concerns about and difficulties with the formative assessments were related to four main issues. One issue was that some of the initial explanations I gave and that were in the literature provided were too theoretical. Another issue was that the teachers felt the examples of formative assessment in the literature did not fit their class situations. A third issue was that the teachers associated the formative assessment with course evaluations. The idea of being judged created some stress. Both teachers expressed concern about the students' demonstration of learning in their classes and about the students liking what they were doing. The coordinator, Rose, also associated the formative assessment with course evaluations. She turned Amanda's first formative assessment into a combined student assessment and course evaluation. After students completed their self-assessments, Rose asked them to write on the back what they thought of the class, what they liked and disliked, and what they wanted to change or keep. Amanda poured over the results immediately afterwards. She expressed concerned about the students not liking what she was doing and about whether or not she could do the job without speaking Spanish.

The fourth issue was the language barrier. The language barrier made it difficult to explain the forms, understand the responses, and check in with students. During the first formative assessment, Amanda was concerned that students were not able to understand the form. "They are not connecting with the English," she explained (Field Notes, July 17). Consequently, the coordinator and I helped translate and explain the form in Spanish. The students understood after that, but most of them replied in Spanish. Thus, Amanda was not able to understand their responses without assistance. That was stressful because she wanted to make sure she was "on track and able to provide for their needs" (Electronic Message, July 18). The desire to check in with students and make sure they felt their needs were being met was something Amanda and Catherine shared. However, the language barrier sometimes made this more difficult even in the intermediate class. For example, Catherine did not know in the second to last week why Miriam was absent. It turns out she was absent because she had been very ill. This was information Miriam chose to relay in Spanish.

In conclusion, the combination of not having personal information or being able to read formative assessments because of the language barrier, feeling like the formative assessment was part course evaluation, and not having relevant and concrete examples all made the formative assessment process somewhat confusing and stressful. Naturally, this slowed the administration a bit. Our collaborative formative assessment was delayed in Catherine's class until the last week so that it actually turned into a combined formative assessment and reflection (referred to throughout this study as a "final reflection"). Amanda administered her first formative assessment on July 17 and a second combined formative assessment and reflection on August 6.

The issues around the formative assessments were resolved through dialogue over the course of a few weeks. First, both teachers sought clarification. In their Electronic Journals, they inquired further about the formative assessment and suggested that it was one of the newer more confusing elements for them in project based learning. I responded at first by explaining further. Catherine said she had mixed feelings" about the formative assessment (Electronic Message, July 23). She needed more concrete examples. I breached the subject again first during phone meeting with Amanda and later during a face-to-face meeting with Catherine. For the final reflections and formative assessment in late July and August, I provided examples of a series of open ended questions and proposed some specific questions for each class. In both cases, the teachers gently redirected me. Amanda localized the formative assessment and final reflection, fitting them to the course topics and students' metacognitive abilities. Similarly, Catherine and I worked together on a final reflection form, a combined formative assessment and reflection that was "more specific to the group" (Electronic Message, July 28).

The modified versions of the formative assessments and reflections contained less open ended questions. For the formative assessment, in the beginning class, Amanda decided to have more specific skill questions and to list possible answers as well as leave an empty space so that students could write in, circle, or add to the possible responses. For the final reflection in the intermediate class, Catherine ended up asking more specific learning questions and more precise skill questions: "What did you learn about making a newsletter?" and "What grammar did you learn while writing your article?" rather than "What have you learned in this class this summer?" and "What writing skills did you learn?"

In addition, both teachers did do a number of short informal oral formative assessments with out calling that. Catherine had her students do a written assessment of their skills and reflection upon their learning goals in the first week of July. During the summer session, she regularly asked students how they were feeling and called upon them to evaluate and reflect upon their learning. For example, the class had a routine of gathering around the tables to assess their work on the newsletter. Students and teacher would give each other compliments and suggestions. This was a type of formative assessment because it called attention to and gave students credit for their processes rather than simply focusing on the final product. Amanda did similar informal oral assessments. She asked the class on a daily basis how they were doing and whether or not they liked what they were doing. On a number of occasions she asked me to translate as she asked the students to think about what they had learned and the progress they had made. Despite the difficulties posed by the language barrier, both teachers made repeated and regular efforts to exchange information and encourage student reflection on learning.

Student Response to Formative Assessments

The intuition of the teachers towards providing more specific rather than open-ended questions for the written formative assessments and reflections proved right. The specific questions the teachers designed helped focus student responses. Teacher reports and student responses to the formative assessments, reflections, informal formative assessments, and interview questions in this study all suggest that students did not have the metacognitive language needed during the session to answer open questions about their learning. However, the specific questions in the modified formative assessments and

reflections yielded informative answers. I had been concerned that specific questions would limit student responses to answers that fit within the question stem, but this was not the case.

In Amanda's first formative assessment, the students had a list of suggested answers to chose from, but the learners did not limit their responses to these answers. The students selected and skipped answers and listed their own ideas. For example, in response to the question, "What English language vocabulary have you learned?" student participants selected from different parts of a list of twenty six words and phrases. They also chose to write in their own words. For instance, Fernando selected just one word from the list and wrote in three others of his own. Students also skipped vocabulary sections that they did not feel were relevant to their learning. In sum, the learners seemed to be working thoughtfully, and the results were informative.

Students in the intermediate class had a similar response to the final reflection (the combined formative assessment and reflection given at the end). The more precise questions Catherine asked resulted in a variety of informative answers. In response to the question, "What did you learn about making a newsletter?" students gave a variety of responses. They mentioned learning how to use different formats to communicate, how to write an article, how to put in a picture and a title, and how to organize the newsletter by themes. Lillia said she learned about the organization of the newsletter and developing good content while Miriam said she learned about titles. In contrast, another student used the question as an opportunity to provide a positive evaluation of the class and to say that she hoped it would stay the same. Overall, the specific question stems and lists Amanda and Catherine provided in the formative assessments and reflections did not seem to limit

student responses. Instead, they served as memory jogs and idea generators helping students to recall a variety of details.

Student response to the formative assessments and reflections was mostly cooperative and enthusiastic. They answered carefully and gave detailed responses to the forms. In Catherine's class, Lillia and other students crammed multiple sentences into the comparatively small space on the final reflection form. One student even typed out her answers on the computer and printed several copies. In Amanda's class, students took their time completing the various forms. They seemed eager to fill them out correctly as they repeatedly asked for help. One interesting exception arose during the July 17 formative assessment in Amanda's class. Sitting upright with a stern frown on her face, Alicia continued to work on the computer ignoring our instructions for the formative assessment. I walked over and explained the importance of the formative assessment. She did not respond, but completed the form nonetheless saying that she had learned a number of English language vocabulary words.

After the first formative assessment, Amanda sent a message saying it was useful. Rather than looking at it as a way to judge her teaching, she saw it as a way to analyze the needs of the students.

> The formative assessment is really valuable. I'm not looking at them in terms of positive and negative just what can we provide that they would like to have (July 18)

Indeed the first formative assessment and course evaluation enabled Amanda to learn that the students wanted more Spanish translation, more practice with English vocabulary, and time both in the computer lab and in the classroom. All of this information had a

direct impact upon the way Amanda organized and conducted class for the remaining weeks.

The experience of the second formative assessment and final reflection in Amanda's class was different from that of the first formative assessment. Amanda administered the second batch of forms without help from the coordinator or me. She explained the forms in English with a little help from some student translators. She talked to the students again about the importance of giving their honest opinion. Then the class began to joke together about being honest. With Amanda speaking in simple sentences and the students in broken English, they played named things they wanted: "new computers, new class rooms, clean students, a new projector, no kids changing the computers" (Class Transcript, August 6). Amanda told the students they could respond in Spanish if they wanted. Interestingly, half of the students responded in English.

Alicia, who had been so unhappy during the first formative assessment, filled out the final reflection with no complaints. Her final reflection was positive. She said she had learned in the class how to use the computer with more facility and that she liked using the computer. The only thing she wanted to change in the class was to meet more days during the week! Overall, the administration of the second forms was smoother; students understood the purpose better and Amanda said she thought the students were more comfortable expressing their honest opinions. Most notably, students used more English in their responses.

The intermediate class used quite a bit of English in their final reflections as well. Catherine set the stage for comfortable reflection. She told her students that they could answer in English or Spanish, that there were not right or wrong answers, and that they

should not worry about their grammar. The students engaged in the task working quietly for a good 30 minutes. Four students including Miriam answered the questions in English and one student used mostly English. Lillia and another female student answered in Spanish. In the end, the final reflections and formative assessments were constructive experiences for both classes. The results also brought some solace to the teachers because a number of students decided to use the forms to express positive feelings about the class.

Chapter 5: Discussion

The following chapter includes three sections. In the first section, I provide a brief summary of the study and discuss the contributions it makes to the field of second language acquisition. In the second section, I discuss the data analysis results in relation to the five research questions and salient themes that emerged in the data. In the third section, I explain the implications of the study and make suggestions for future research.

SUMMARY OF DISSERTATION STUDY

This dissertation employed case study methodology to investigate computer-assisted project based learning in two adult English as a second language classes. The version of computer-assisted project based learning (PBL) that was employed in the two classes includes *all* of the following instructional features:

1) the organization of learning around real world problems,
2) student centered instruction,
3) collaboration,
4) teacher as facilitator,
5) authenticity through the use of authentic materials and audiences,
6) formative assessment,
7) reflection,
8) the production of authentic artifacts,

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9) and the use of computers to support instruction and learning.

The two PBL classes in the study were part of a Community Based English Tutoring (CBET) program in Northern California. One of the classes is a mixed mostly beginner class, referred to as "Amanda's beginning class." The other class is a low to high intermediate level class, referred to as "Catherine's intermediate class." Participants include the CBET program coordinator, the two teachers, and twenty seven student participants: twenty men and women in Amanda's beginning class and seven women in Catherine's intermediate class. Within the two classes, the study focuses on four case study participants: Lillia and Miriam, two female students in Catherine's class, and Fernando and Lupe, one male and one female student in Amanda's beginning class.

A qualitative research methodology is used to explore emergent themes in the study and the following research questions:

1. What are the learning experiences of adult ESL students in the two computer-assisted project based learning classes?

2. What are the linguistic experiences of adult ESL students in the two computer-assisted project based learning classes?

3. What linguistic gains are afforded by computer-assisted project based learning?

4. What instructional challenges do the two ESL teachers experience with the computer-assisted project based learning approach?

5. What are the teacher and student responses to the PBL instructional features of formative assessment and reflection in the two computer-assisted project based learning classes?

The data collection occurred over the course of one complete summer session from June 23, 2003 to August 7, 2003. Inductive analysis is employed to analyze a combination of

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data which includes baseline background and final skill level questionnaires, class observations, field notes, regular class recordings, teacher journals, student work, formative assessment, reflection, and actual projects as well as student and teacher interviews.

CONTRIBUTIONS

This study is one of the few empirical studies that provide an in depth examination of the learning and linguistic experiences of adult English as a second language students in computer-assisted project based learning classes. Unlike previous empirical studies in second language acquisition (SLA) which have focused primarily on the instructional experience and on evaluations of project based learning (Beckett, 1999; Eyring, 1989), this study focuses on the *learner's* linguistic and overall learning accomplishments. The study fills a gap in the literature on project based learning and second language acquisition where no other studies in SLA, to the best of my knowledge, focus on the learner experience within a computer-assisted project based learning ESL class. The study is also distinct because it includes reports on the experience of novice to beginning level ESL learners whereas previous studies were conducted with intermediate to advanced level second language learners. In addition, the study expands the traditional question of what discreet points and reading, writing, listening, and speaking skills students develop in project based learning classrooms. The study not only looks at the development of traditional skill areas but adds an examination of learning strategies, higher order thinking, and electronic literacy skills. A central premise of the study is that

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these skills and strategies are relevant to second language acquisition particularly within a student centered computer-assisted environment.

DISCUSSION

The results of this study lend support to much of the previous research inside and outside Second Language Acquisition (SLA) while also adding new insights. As one of the few empirical studies in the area of computer-assisted project based learning that investigates the learner experience, it provides some validation as well as some challenges to the last two decades of teacher reports in SLA. The conclusions of this study need to be evaluated within the context of the relatively short period but critical timeline of data collection.

The Learning Experience

In the following section, I address my first research question about the student learning experiences in the two computer-assisted project based learning classes. The question scope includes the development of "other" skills as well as student affective outcomes in the study. In the area of *other* skills, I discuss higher order thinking, computer, and electronic literacy skills.

Higher Order Thinking Skills

Participants in Catherine's intermediate class developed the writing process and higher order thinking skills of brainstorming, summarizing, evaluating, and planning. Participants in Amanda's beginning class developed their problem solving and teamwork

skills. These higher order thinking skills, which are so crucial in today's information age, facilitated the participants' development of specific second language skills.

In Catherine's class the writing process skills students learned played a key role in a positive feedback cycle. Development of writing process skills enabled students to produce more writing. As students produced more writing, they began to feel more competent and to develop their writing fluency. Indeed the only problem the intermediate teacher reported in relation to writing was how the students would fit everything into the newsletter. Consequently, students were asked to critically evaluate, select, and modify their writing for the newsletter, thus enabling another set of higher order thinking skills to develop.

Analogously, in Amanda's class, students were engaged in high level problem solving not only in relation to the main project theme of helping their children with school, but also in relation to class problems. Student interest in the project theme and the urgency of classroom problems seems to have propelled them into English language dialogue. Beginning and novice English speakers alike began pushing forward, motivated to practice their skills and test their ideas. They managed to communicate through collaborative translation and by speaking via their more advanced team members. The higher order thinking skills of team organization and problem solving became intertwined with their motivation and their developing ability to speak English.

Computer and Electronic Literacy Skills

Students in Amanda's class went from not being able to turn the computers on to being able to do basic word processing, conduct searches on the Internet, and to copy and

paste images into Microsoft word. They also learned English language "computerese." In Catherine's class, students further developed their word processing skills. They learned about tool bar functions, from formatting to creating tables. They practiced using templates and inserting clip art, and developed knowledge about how to produce documents in Microsoft Publisher. More importantly, Catherine's students developed their electronic literacy. They conducted research on the Internet for their articles, and they employed multi-media tools to communicate their ideas. These activities enabled them to gain knowledge about how to use computers to interpret and express meaning, one of the most important skills for students and professionals in the twenty first century (Shetzer and Warschauer, 2000). Additionally, the development of computer skills was a motivation and confidence enhancer for students in both classes.

Affective Outcomes

The results of this study are, for the most part, consistent with previous findings about the positive affective outcomes of project based learning: increased motivation, confidence, and independence (Au & Carroll, 1997; Wrigley, 1998). Students did increase their confidence in their English language and computer abilities over the course of the summer 2003 PBL class. However, the results of this study also suggest that some students are not affected or may have decreases in confidence. Two participants in the beginning class did not increase their confidence levels in regard to English language learning and computer skills. One forty-seven year old male participant said his lack of education and chronic back pain made it difficult for him to learn. He felt he had learned little English, if any, and that he had gained few computers skills. Another male

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participant of sixty-six years said he was having trouble with his memory because of his age. He also said that because of his arthritis he was having trouble manipulating the computer keyboard and mouse. He felt that he was not able to learn much on the computer. Likewise, he did not think he had learned much English, but he said the little he knew was coming back to him. Common wisdom in second language acquisition is that no one methodology can capture all student needs. Nonetheless, these results call us to pose a question which would be worth further research, How does computer-assisted project based learning work for second language students with disabilities or special needs?

This study also provides insight into the unfolding of some of the principal goals of project based learning methodology: fostering student ownership and independence (Blumenfeld et al., 1991; Fried-Booth, 1986). In the study, student participants in the intermediate class gained ownership of their newsletter projects when they made decisions about the content and layout. They worked independently in groups and exhibited pride in the final results. Miriam, one of the focus participants whose article was chosen to go on the first page of the newsletter, was so proud that she went home and told her husband. He congratulated her and she felt "very very happy" (Final Interview, p.1). When I asked Lillia about the completed newsletter she said, "me siento muy orgullosa" [I feel very proud] (Final Interview, p.6).

Likewise, student participants in the beginning class, made significant strides in their ability to work independently. Remarkably, students moved from being passive direction takers who sat silently at their computers waiting for the teacher to begin, to active planners, leaders, and doers who started up computer programs and worked

collaboratively to advance their projects in the presence and in the absence of their teacher. These students expressed pride in their book projects showing their work nightly to their children, who were in childcare next door.

The data reveal that along with the pride and ownership the students had predominately positive attitudes. Throughout the study, the majority of the students expressed positive attitudes towards the class, the group work, the computer, and their teachers. They expressed happiness, satisfaction, and enjoyment in spontaneous comments during class, in course evaluations, and without solicitation in reflections and final interviews. Overall, most of the students were strongly engaged in the course activities most of the time.

Two salient events towards the middle of the study were reflective of the independence and engagement that had developed. In Catherine's class on July 23, Miriam, a previously shy student, literally refused along with her classmates to remove themselves from their project work on the computer. In Amanda's class on July 30, students engaged in a "printing frenzy" when the teacher was called away from the class for an emergency (Amanda, Final Interview, p.9). Working together, the students, who at the beginning of the session did not know how to turn on the computer, started up their word processing program and entered into the Internet. They began finding, copying, and printing images for their books, for each other, and for their children. This activity continued when Amanda arrived. She was ignored as she entered the room. The students in both classes are said to be from a culture that generally is accustomed to the teacher as an esteemed authority figure. During the study, the students seemed to have altered their perceptions of teacher and student roles in the class. An important parallel can be drawn

between this experience and that of students in Luke's 2002 study of inquiry-based Spanish class. In his study, Luke found that the inquiry based classes "offered students the opportunity to assume and explore new roles" (p.224)." The participants in this study enthusiastically embraced their new role as independent learners.

Motivation has been at the forefront of discussions about project based learning for some time and a number of researchers and teachers in second language acquisition have noted the motivational benefits of project based learning (Coleman, 1992; Fried-Booth, 1986 Moss and Van Duzer, 1998). However, few second language scholars have looked at the interconnectedness that exists between motivation, confidence, ownership, engagement, and the instructional features of PBL. Blumenfeld et al. (1991) make the point that in order for PBL to be successful learners need to be cognitively engaged in the subject matter and motivated to work strategically on tasks. To obtain this level of motivation, students need to have learning rather than performance orientations, feelings that they are competent enough to complete the task, and an "interest and value" of projects. How do the instructional features of PBL in a second language classroom contribute to these motivational bases? This study offers an opportunity in a second language context to explore some possible connections discussed by Blumenfeld et al. (1991) and others (Barron et al., 1998; Edelson et al., 1999; Krajck et al., 1998).

Student and teacher reports, researcher observations, and class data in the study all suggest that student motivation in both classes was sustained throughout the session. Students began with strong instrumental motivations of learning English in order to obtain jobs and to help their families. During the study participants in both groups expressed intrinsic interest in learning English because it was fun and interesting. Several

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students also exhibited integrative motivations for learning English as they reported trying out the language and new words they had learned in class with American people in the community. Although it is difficult to know what outside factors may have contributed to their motivation shifts, it was clear that the motivation students had was funneled into class. They arrived and attended despite difficult schedules, stayed predominately on task during teamwork, initiated English language activities during class, and voluntarily brought work home. Learner motivation increased as students became engaged in their projects and peaked towards the end of the project completion.

The data show multiple relationships among learner motivation, instructional features of PBL, and other affective outcomes. Figure 1 illustrates some of the findings.
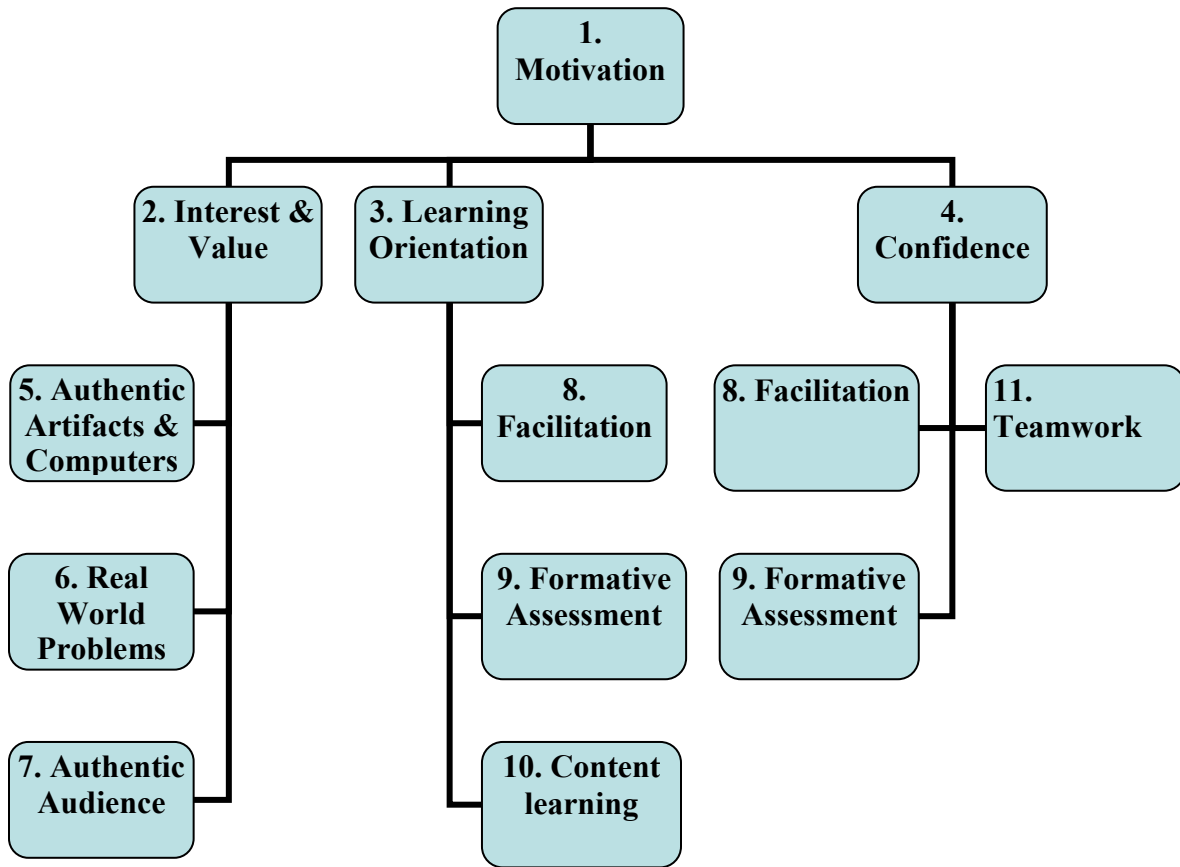
Figure 1: Motivation, Instructional Features, Affective Outcomes

In Figure 1 there are three levels. *Motivation* is at the top (#1); *interest and value* (#2), *learning orientation* (#3), and *confidence* (#4) are in the middle; and the instructional features of PBL are in the four lower branches below (#8-11). The far left branch at the lower level represents instructional features in PBL which contributed to the interest and value students had for their projects. These include the use of *authentic artifacts and computers* (#5), *real world problems* (#6), and *authentic audiences* (#7).

The use of authentic newsletter and book formats was a factor of great interest to students. Computer technology was interesting and motivating to them. Students also said they thought the *real world problems* (#6) of how to learn English and how to help their children in American schools were valuable. Knowing that their projects would be viewed by an *authentic audience* (#7): their families, teachers, and program coordinator; added a third level of interest for students.

The middle right branch at the lower level in Figure 1 represents instructional factors which contribute to students *learning orientations #3)*. These include *facilitation (#8), formative assessment* (#9), and *meaningful content learning* (#10). On the one hand, the absence of grades may have decreased the focus on performance. On the other hand, there is a clear temptation in project based learning to focus on the project outcome. In the beginning class, what seemed to keep students focused was the idea that they were learning content that could help their children. One student explained that because they were parents, they needed to engage in real learning: "ahora nosotors estamos viendo otra realidad" [Now we are living another reality], "*La responsibilidad es different aprender y queremos algo serio para nosotros* [The responsibility is different [for] learning and we want something serious for ourselves] (Anonymous, Class Transcript, July 2). In the intermediate class, it was clear to students that they were working on their principal goal to learn English. As Sarai explained, "Estamos mejorando nuestra <u>English</u> mientras que trabajamos" [We are improving our "<u>English</u>" while we work] (July 17). Teacher *facilitation* and *formative assessment* also played a role. As facilitators, the teachers sent the message that the main goal was to learn English. They focused on providing positive feedback for student attempts at the language rather than being grammar police. They

used feedback sessions and class discussions to note students' productive learning processes. The teachers did not hesitate to stop the "doing," the work on the project tasks, when student interest in English language questions or topics arose. Lastly, the written formative assessments in Amanda's class contributed directly to students' positive feelings because it helped them to gain awareness of what they were learning. It also contributed indirectly to feelings of satisfaction in the course because student responses led the teacher to include more vocabulary and translation.

The far right branch in Figure 1 represents instructional features that helped students to feel more confidence, or competence, in their ability to complete the projects. These include the teacher's *facilitation* (#8), in particular, the scaffolds they provided for students, the notion that errors are learning opportunities, and the constant coaching and encouragement they gave. Catherine said the students had reached a comfort level in their classes. They understood that their work did not have to be "perfect" (Alicia and Patricia, Final Reflections). At the same time, their teachers broke the projects down into more manageable tasks. Catherine created a brainstorming, writing, editing, and evaluating routine. Amanda created step by step worksheets. All of this contributed to the students feeling that they could succeed in the overall project. In addition, student participants in both classes said that *teamwork* (#11) made them feel more confident. The *formative assessment* (#9) which made students more conscious of their learning and which resulted in changes in Amanda's curriculum also affected the overall value and interest students had in the class. These instructional elements contributed to student motivation to work and to work strategically. Without confidence, learners are less likely to engage in strategic activity (Paris and Winograd, 1990). Why should they persist if they do not

think they can do it? Lillia and Miriam said during their final interviews that they knew they could complete the newsletter. During the session, they worked to correct their grammar and design the layout in order to make it the best they possibly could for their audience. Likewise, Fernando and Lupe knew they were learning computer skills, and they wanted to use them in their book pages which they showed to their children each night after class. These affective factors combined with the instructional features of PBL played a role in the sustaining of student motivation throughout the session and project completion.

The Linguistic Experience

This study supports previous claims that project based learning can provide opportunities for "comprehensible output," meaningful communicative interaction (Swain, 1995). English language communicative opportunities were provided throughout the skill building, relationship forming, brainstorming, information gathering, organizing, planning, editing, computer production, and evaluating stages of project development. Linguistic opportunities occurred during whole class discussions, teacher student dialogues, and teamwork collaborations. Surprisingly, the students, all native Spanish speakers, used a good amount of English in their groups. They helped each other with English language pronunciation, spelling, grammar, and vocabulary; practiced reading English language sentences aloud, and employed English language "computerese." They pooled their English language resources to understand teacher directions and to complete English language assignments.

The complex level of English language that teachers directed at students in this study was by no means limited to "comprehensible input," language that is just beyond a learner's current level (Krashen, 1981). However, a high level of communicative interaction was made possible at both class levels through the contextualization of language in class routines and, in the beginning class, through collaborative translation. Within the project and classroom routines, there was a natural repetition of instructional language and cognitive terms. For example, the routine of brainstorming, planning, writing, editing, and evaluation in Catherine's class provided a consistent framework with in which students could deduce meanings. In the beginning class, in particular, Spanish also became a linguistic resource and tool.

Translation served four useful roles in the beginning class. One, Amanda had students translate her English into Spanish in order to facilitate complex English language discussions and garner wide participation. Two, collaborative student translation from Spanish to English allowed students from novice levels up to communicate ideas to their teacher and take part in whole class discussions. Three, translation of class handouts and worksheets was used as a tool for vocabulary learning. Four, translation enabled students and teacher to conduct formative assessments and reflection, providing each other with valuable feedback for evaluating their feelings and learning. From the perspective of linguistic development, the most interesting aspect of the translation is that it became a collaborative venture. At least seven different students got involved in translating for Amanda and helping other students to speak English. They did what we do in real life, outside the traditional classroom, when tasks need to be accomplished or messages need to be transmitted: they pooled resources.

Interestingly, the presence of meaningful communicative opportunities did not lead to frequent *audible* negotiation and modification of language (Swain, 1985, 1995). It was rare to hear individual students repeating corrected forms. The intermediate teacher who knew her students well had few communication break downs with students and, in the beginning class, communication break down was frequently handled through translation. On the other hand, students in the intermediate class did modify their writing in response to peer and teacher feedback sessions. Furthermore, computer work offered two different types of negotiated interaction. One, as they listened and responded to the teachers' English language instructions on the computer, students had to reconsider understandings and modify actions that produced the wrong results. Two, while conducting research on the Internet, incorrect word choice and misspelled words yielded the wrong images and information. Students then had to rethink their search terms and spelling to negotiate a new result. Most intriguing, however, was that the negotiated interaction between teachers and students, and students and computers was frequently collaborative. In the beginning class especially, students would help each other to speak and to correct incorrect forms or clarify their English language meanings to the teacher. The instances of collaborative communicative interaction bring up an interesting question for future research. How much can students learn from collaborative communicative interaction? It is difficult to know whether learners were actually "reconstructing their knowledge base," paying attention to the differences and changing their conceptions, in a way that would enable them to learn and eventually acquire the new forms. However, the collaborative dialogue did seem to afford more opportunities for meaningful communicative interaction.

Linguistic Gains

Although it is beyond the scope of this exploratory study to state whether students were able to *acquire* language, the results of the study do show that student participants developed specific reading, writing, listening, and speaking skills. In addition to showing the development of the four skills, the study results suggest the potential for fostering second language strategy development in PBL. Equally pertinent is that the study provides a frame for looking into the relationships between English language development and computer and electronic literacy skill development. It shows how the skills can be combined as students listen and respond to English language instruction on the computer, talk about computer actions and generate products, learn English language "computerese," read electronic texts, and write using a word processor.

One of the most important findings of the research is the holistic picture the data provide of a language learning system within computer-assisted project based learning (PBL). A composite picture of the data illustrates how the instructional features of PBL can interact with student affective outcomes and English language learning. In the following section, I summarize the English language and second language strategy development that was indicated across instruments. Then I discuss the collision between English language and computer development. Finally, I provide an illustration and discussion of the multiple relationships that emerged across instruments.

Summary of Linguistic Gains

In the following section I provide a summary of the linguistic gains in both classes. I begin with an overview of linguistic gains in Catherine's class and then summarize linguistic gains in Amanda's class.

Students in Catherine's class learned to recognize and sometimes apply routine idioms, newsletter language, and a personal array of vocabulary; they developed their ability to read about the project themes and to read online. The data show that Catherine's students improved their writing in the areas of language, content, grammar, and mechanics. They developed writing process skills and increased their writing fluency. In addition, the students developed their ability to listen actively, listen with more ease, and speak more fluently. Previous studies in project based learning have frequently cited the opportunities for second language learners to develop fluency (Beckett, 1999). The results of this study also lend support to the idea that project based learning can affect the development of specific forms. Turnbull (1999) speculates that project based learning has the potential to address grammar curricula. His study of "multi-dimensional project based teaching" (project based learning integrating linguistic, cultural communicative and general educational goals with experiential focus) suggests that

> Multidimensional project-based curriculum provides a framework in which a focus on form can be authentically integrated with a motivating and interesting communicative experiential focus. The results reinforce the near-consensus in the field that SL learning is more effective when the curriculum centers on meaningful content rather than exclusively on language forms (p.561).

Indeed, the story of Catherine's class in this study illustrates how the holistic and experiential nature of project based learning can offer an engaging structure for "authentically integrating" focus on form.

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Catherine's students were able to develop their English language grammar while writing articles for their newsletter projects. The authentic nature of the newsletter format combined with the authentic audience for the newsletter, worked as an impetus for communicative clarity in student writing. Students were motivated to improve their writing, and they were highly engaged in the editing process. Their engagement in the editing process led Catherine to provide *just in time instruction* on grammatical form. Within the context of their articles, this discussion of form was meaningful and interesting to students. They responded eagerly by spending time with their work, adjusting the form, and returning for teacher and peer feedback. In sum, the motivational role of the newsletter project provided a framework for intensive student initiated focus on form. Although it is difficult to know whether students actually acquired the forms, it is clear that there was some memorable development. The success of their grammatical study is apparent in the decisions these students made to correct the forms in their final version of the newsletter. This grammatical learning was also at the forefront of students' minds as they completed their final reflections and interviews. According to their reports, English grammar was one of the primary skills they "learned."

The last area of development which has rarely been addressed in studies of project based learning in second language (Coleman, 1992; Eyring, 1989; Fried-Booth, 1986; Hilton-Jones, 1988) is the development of second language strategies. In one of the few project work studies discussing strategy learning, Carter and Thomas (1986) reported that students were able to develop strategic competence, or an ability to deal with unpredictable language in authentic settings. Additional types of strategic development were found in this study. In Catherine's intermediate class, students expanded their

metacognitive strategic knowledge developing the strategies of planning for a language task and seeking practice opportunities. Within the area of cognitive strategies, Catherine's students expanded their knowledge in the area "creating structure for input and output." They made notable strides in their ability to summarize texts they were reading as well as their ideas in writing.

In Amanda's beginning class, student participants developed vocabulary related to teamwork, the content of their projects, routine conversational language, and class activities. Amanda's students developed sentence level reading skills in relation to their English and Spanish language worksheets and handouts. They developed their ability to recognize certain words and to better understand English language instructions in class. The students developed their English language speaking skills. They learned new words, they remembered and learned how to say words they already knew, and they gained more comfort in speaking English. In regard to writing, only small improvements were apparent as students worked simultaneously on developing their Spanish and English language literacy. Second language strategy learning in Amanda's class only occurred in a few areas, but the growth made a clear difference in learner performance. In the area of cognitive strategy, the students developed the strategy of translation. In the area of social strategies, students improved their group work skills and learned organizational tactics like assigning roles to team members. In the area of compensation strategies, the participants expanded the ways and frequency in which they asked for help and sought clarification.

In summary, language development occurred in both classes even while other goals such as content learning and project development were the driving force. As,

Hilton-Jones, (1988) found "language learning can take place if the linguistic aims are not always superior to other aims" (p.11). One of the most novel aspects of the students' English language development in this study was the way in which it intertwined with their computer skill development. In Amanda's class, for example, the area of greatest development was student recognition, use, and understanding of English language "computerese." The event of learning English language "computerese" emerged across instruments: class transcripts and observations, formative assessments, final reflections, plus teacher and student interviews. It was noticeable and it was memorable. At the same time, many of the opportunities for meaningful communicative interaction in English were centered around computer activities. Students had to follow English language instructions on the computer; they worked with an English language tool bar and search engine; and, they employed English language "computerese" as they discussed computer tasks or helped one another on the computer. Furthermore, students in Catherine's class learned English language writing on the computer. Lillia, who reported in her final interview that she could only write English on the computer, was armed with one of the most important electronic literacy skills for academic and professional development in English speaking countries.

Overall, this study is consistent with previous claims about the potential of reading, writing, listening, and speaking development in project based learning. It also provides evidence for the development of second language learner strategies, English language grammar, and "computerese." However, one of the most important contributions the study makes is the in depth examination of the learner's whole linguistic experience. An analysis of this whole experience yields new insights into the

relationships between linguistic gains, affective outcomes, and the instructional components of computer-assisted project based learning. It shows how synergistic different elements can be.

LINGUISTIC GAINS AND THEIR RELATIONSHIP TO THE LEARNING EXPERIENCE

Student linguistic development in this study can be viewed from many different perspectives. In the following analysis, I look at students' linguistic development in relation to the instructional features of computer-assisted project based learning (PBL) and affective outcomes. Although it is impossible to determine exact or single causal relationships, it is possible to explore the connections that were reported and demonstrated in the study data. These connections were most explicit in the areas of writing development in Catherine's class and speaking development in Amanda's class. Case examples of speaking and writing development show how the combined instructional features of PBLcan work together to support student learning.

Writing Development Relationships: Catherine's Class

The results of the study suggest that the development of language, content, grammar, mechanics, and writing process skills in Catherine's class, were supported directly and indirectly by the instructional features of facilitation, formative assessment, authentic artifact, and authentic audience, and meaningful project theme. Figure 2 illustrates some of the relationships that emerged in the study data.
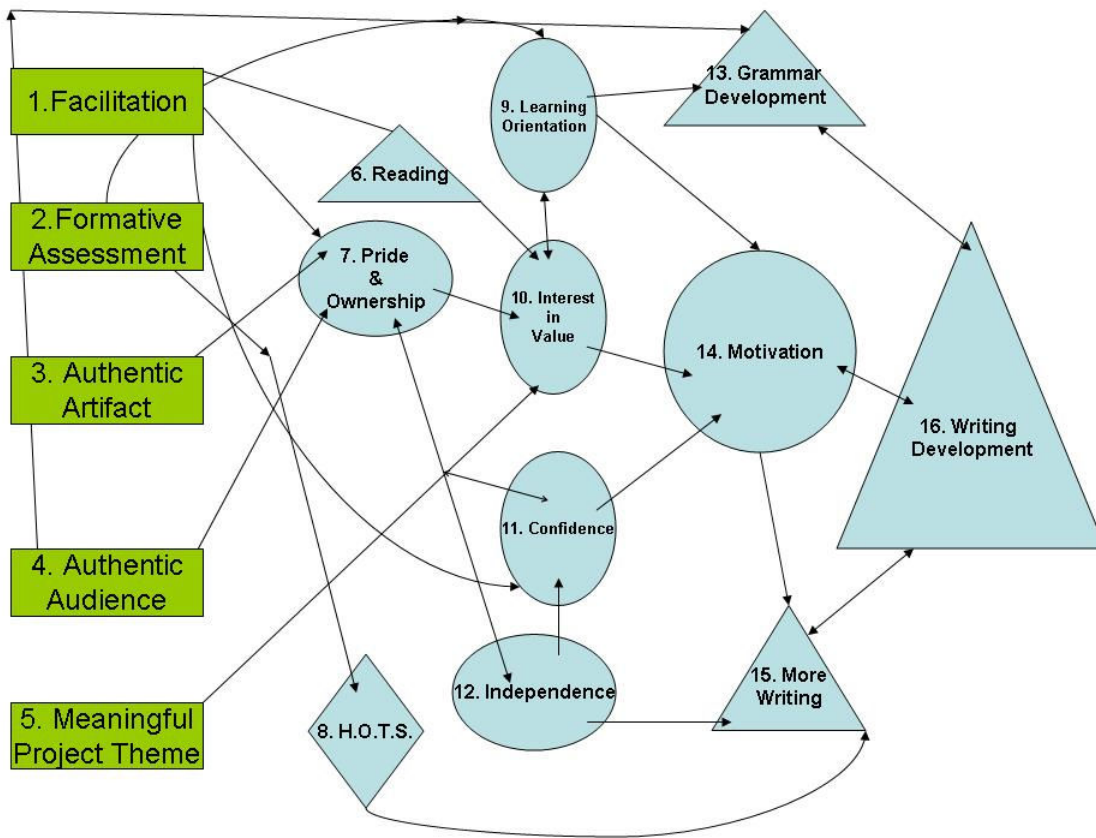
Figure 2: Instructional Features, Affective Factors, and Writing Development

I discuss Figure 2, "Instruction Features, Affective Factors, and Writing Development" reading from left to right. A key instructional feature was *Facilitation (left rectangle, #1)*. Catherine facilitated by providing constant encouragement and scaffolding to students. Miriam suggested that Catherine's help and positive feedback enabled her to feel more *confidence* (third small oval, #11). At the same time, Catherine said she worked to make sure the project was the students'. She let the learners make choices about the content and gave them responsibility for solving issues of layout and organization. This contributed to student feelings of *pride and ownership* (large oval left

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center, #7). Catherine also gave students models for their projects. They read "Easy English Times" and other newspapers in order to better understand the discourse style and content of a newsletter. These models contributed to students' *interest and value* (small middle oval, #10) because it showed them how their work was related to real world artifacts. The combined effect of Catherine's facilitation helped to make the learners feel more confident. Lillia and Miriam said that initially they had no idea how a newsletter was put together, but after sometime working with Catherine they felt better, and they knew they could do it. Catherine had also heavily scaffolded student development of *higher order thinking* (lower left diamond, #8). She enabled them to develop writing process skills such as brainstorming, summarizing, planning, and organizing their writing. The development of these skills made it possible for students to produce *more writing,* (small triangle #15). They were able to generate more ideas, as well as organize and plan different articles rather than getting lost in the specific mechanical details as they had done in the first weeks of class.

In the area of *formative assessment* (second left rectangle, #2), Catherine's focus on providing positive feedback for learning processes seemed to play a role in student *learning orientation* (top small oval, #9). As she stopped work for discussions, students reflected on their process and evaluated their writing and overall work. This underscored the idea that the goal was not simply to get the newsletter out and impress others with the outcome. The goal was to learn English and learn about writing as well as the newsletter production process. Catherine's feedback sessions with students also seemed to boost their confidence. The interest and value, confidence, and learning orientations that were

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nurtured through facilitation and formative assessment contributed to students' overall *motivation* (large circle #14) and *writing development* (large triangle #16).
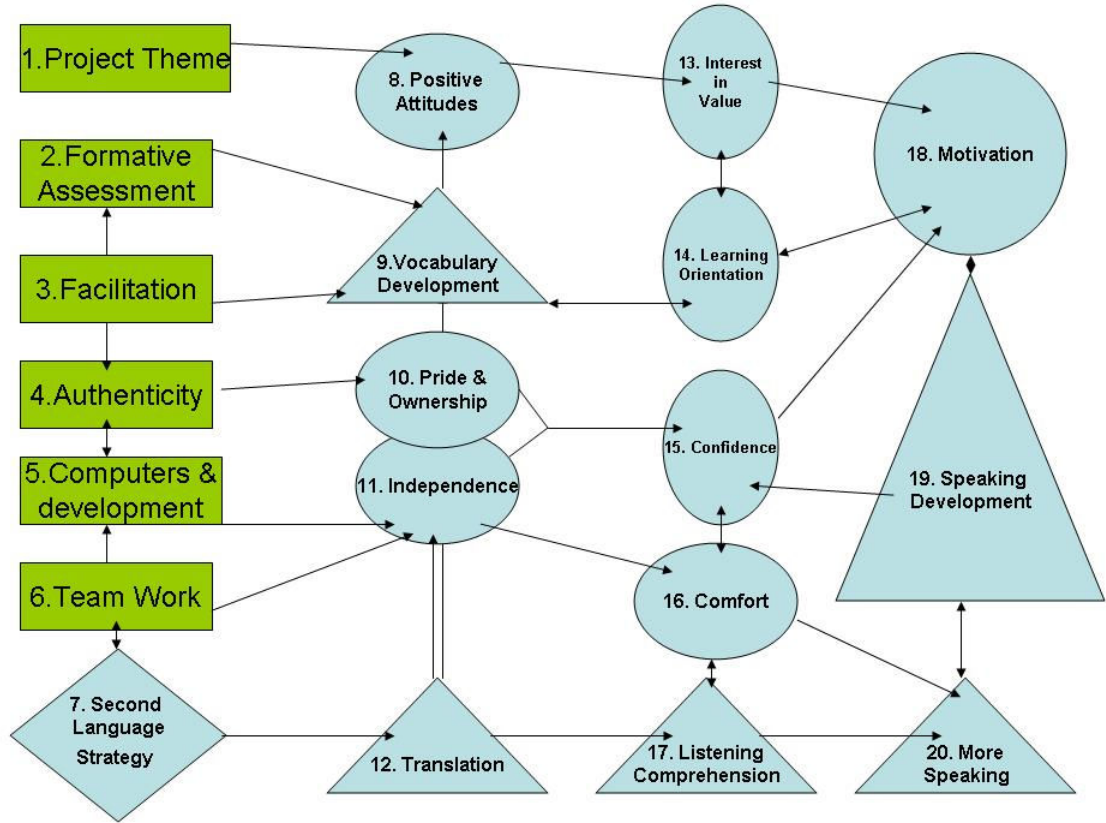
The use of *authentic artifacts* and authentic *audiences* (left middle rectangles #3 and 4, respectively) also seemed to play a role in students' overall motivation and writing development. The students "felt important" because they wrote the newsletter in a real publishing format (Catherine, Final Interview, p.16). Moreover, they knew their families, teacher, and coordinator would read the newsletter. The event of publishing contributed to the students' "pride and ownership" and led directly into their "interest and value" of the project. Having an authentic audience seemed to motivate students to improve their writing. While writing the articles, the learners became engaged in the editing process and responded enthusiastically to "just in time" grammatical instruction, mini grammar lessons given in response to learner questions and errors. Multiple data sources indicate that instruction and editing resulted in *grammar development* (top right triangle, #13), which contributed to overall writing development. The *meaningful project theme* (bottom rectangle #5)*, centered on students' personal learning experiences, also played a role in learner interest and value of the project. These affective outcomes appear to feed into one another. As shown by the double arrows in Figure 1, the system was not unidirectional. Moreover, it is clear that the students' writing development was mediated by a number of affective factors that seemed, in most cases, to be influenced by the instructional features.

Speaking Development Relationships: Amanda's Class

Similarly, data from Amanda's beginning class suggest that learner development of English language speaking skills was supported directly and indirectly by the

instructional features of meaningful project theme, formative assessment, facilitation, authentic artifacts and audiences, and teamwork. The relationships among the instructional features, affective outcomes, and speaking development are shown in Figure 3, "Instructional Features, Affective Factors, and Speaking Development."

Students in Amanda class told her that the *project theme* (rectangle #1 top left Figure 3) of how to help their children in school was valuable. They expressed interest and overall *positive attitudes* (horizontal oval #8) in regard to this project theme. The *formative assessment* (rectangle #2) also contributed to positive attitudes both because it raised student awareness of what they were learning and because it led to changes in the curriculum. The curricular changes involved more *translation* and *vocabulary* (triangles #12 and #9, respectively). Amanda said that her students were much happier after she started reviewing vocabulary in Spanish and English. The willingness of the teacher to stop along the way to review vocabulary and the interest of the students in doing the reviewing (rather than simply focusing on their projects) was reflective of student *learning orientations* (vertical oval #14) and teacher encouragement of mastery over performance goals. As a facilitator, Amanda's primary concern was skill building; the project was a vehicle for learning not an end in itself.

Figure 3: Instructional Features, Affective Factors, and Speaking Development

Amanda's facilitation included "just in time instruction" on vocabulary and of other skills needed to produce the books and their authentic artifacts. She facilitated teamwork (bottom rectangle #6) plus the learning and practicing of second language strategies such as translation and asking for help. In addition, Amanda provided facilitation in the form of scaffolds: English and Spanish language worksheets with step by step instructions for project tasks. Overall, her facilitation enabled the students to have more *independence* (horizontal oval #11). With this independence, students gained more *confidence* (vertical oval #15) and ability to work on their projects even when Amanda

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was called away from the classroom. The independence combined with the excitement of creating computer generated book pages added to student *pride and ownership (horizontal oval #10)*. They put in a good amount of effort and showed their book pages to their children on a nightly basis. The frequent use of *computers* (second to bottom rectangle, #5) led to the development of computer skills. Having computer skills gave students more independence and confidence, contributing to their overall *motivation* (large circle #18).

Teamwork (bottom rectangle, #6) brought students further independence, pride and ownership. Students said they felt more comfortable working in groups. In groups they developed the *second language strategies* (diamond #7) of translation and seeking help and clarification. With the group work, class dialogue was not restricted to traditional classroom discourse: the IRE sequence of teacher initiation, student response, and teacher evaluation (Cazden, 1988, p. 29). Students could ask questions when they wanted of the teacher and of each other. They commented on each others' comments and helped each other to speak. Also, the translation improved student comprehension of the teacher's directions and class discussions, which I speculate added to their increased comfort and confidence. Together the elements of translation, comfort, confidence, and *listening comprehension* (triangle #17) promoted more student involvement in English language discussions. Students were practicing English in groups as well. I believe all of these factors contributed to their learning and application of new words and overall development in English language speaking.

The results of this examination of relationships points to the problematic nature of the discrepancies between different applications of project based learning and goals for

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the approach, detailed in the literature review of this study. Given the interconnectedness of instructional intervention, affective outcomes, and learning, one has to wonder whether second language researchers have been unreasonable in their attempts to employ single or partial eclectic mixtures of project based learning instructional features while still expecting to achieve all the reported affective and learning outcomes. Barron et al. 1998; Blumenfeld et al., 1991; and Edelson et al., 1999, who conducted extensive long term research, all claim that project based learning works best as a comprehensive approach. The results of this study illustrate how and why that was the case in two adult English as a second language classes.

INSTRUCTIONAL CHALLENGES

This study does not support findings that project based learning poses special or additional teaching challenges within the second language learning context. Contrary to previous research (Beckett, 1999; Eyring, 1989), the challenges the teachers faced in this study were analogous to the challenges reported in previous studies on project based learning in disciplines outside Second Language Acquisition. Like teachers in other disciplines the teachers in this study had difficulty adjusting to the new method, putting the theory into practice, negotiating a project theme, integrating formative assessment and reflection, and managing project logistics (Edelson et al.1999; Schauble et al., 1995).

Eyring (1989) and Beckett (1999) suggest that project based learned may be more difficult with certain English as a second language populations because students are accustomed to more traditional classroom structures where the teacher is the authority. Beckett (2002) comments on the less positive student evaluations of project based

learning in Eyring (1989) and Beckett (1999). She speculates that the discrepancies between general education students' and ESL students' evaluations of project based learning are due to cultural differences. Beckett writes:

> It is possible that when the students in both Beckett's and Eyring's (1989) studies showed desire for more teacher-centered learning, they could be speaking from Chinese and Korean cultural perspectives that expect teachers (i.e. authorities) to be in charge and pass on knowledge from textbooks, not from a philosophical view of traditional education.

Given extensive research on the challenges of project based learning and the delicate balance between instructional features, I am more inclined to interpret student evaluations in relation to the application of the approach. Frequently, cultures that exhibit value orientations of "lineality," "emphasis on hierarchical principles and deferring to higher authority or authorities within the group" (Kluckhohn, 1951) are also cultures where people tend to be more accustomed to working in a unit or group. According to this study, when that is the case, it can actually facilitate the implementation of project based learning, especially if the groups are well organized.

The Mexican student population in this study was accustomed to traditional instruction and to the teacher being an authority figure, but they were also accustomed to working in groups. In the beginning class, in particular, the students were highly dependent upon Amanda's direction at start of the course. However, working in groups came pretty naturally to them. Arturo explained, "Pues siempre en mi vida todo lo he trabajado en grupo" [Well, in my life I have always worked in groups] (Final Interview, p.2). The teamwork in Amanda's class took some time to set up, but once it was in place several natural leaders emerged. With their organized roles and daily tasks, students began to take responsibility for their learning. Working in teams made them feel

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comfortable and it was "más divertido" [more fun] (Fernando, Final Reflection). The positive responses of students towards teamwork in this study suggest that despite traditional views of the teacher as authority, teamwork may be more intuitive for certain English as a second language groups. However, cultures are complex and it would be a mistake to make generalizations about entire English as a second language populations.

Eyring (1997) asserts that more research is needed to learn about the optimal conditions for implementing project work. The experience of Amanda's mixed level mostly beginner class defies any notion of optimal conditions. The beginning class was "a worst case scenario for implementing PBL" with circumstances ranging from an extremely transient class to "life or death" matters such as what to do when there is a gang shooting in the school neighborhood (Coordinator, June 23). Notwithstanding, the teacher was able to adapt and implement project based learning in such a way that it resolved at least some of the classroom management issues. Through organized teamwork and teacher scaffolded problem solving, students addressed the issue of the constant influx of new students and the challenge of the language barrier. They also developed a degree of self-sufficiency that made it easier to carry on working when Amanda was taken away from the classroom. The experience of Amanda's class suggests that different instructional features such as the organized teamwork can be adapted to help address less than "optimal" conditions. Furthermore, the problem solving focus of project based learning can be used to address actual classroom issues.

In Amanda's class, the teacher pointed out classroom issues to the students and had them resolve the problems with their teams. One example was the problem of the interruptions posed by the constant influx of new students. The old students resolved this

issue by choosing to assimilate the new students into their groups. In other words, the less than optimal conditions of open enrollment were addressed through organized teamwork and a focus on problem solving. On the other hand, it should be noted that the success of the classroom management and group collaboration in this study may have been facilitated by the fact that student participants shared a common language and culture. A mixed language group may have had a different experience.

PARTICIPANT RESPONSE TO FORMATIVE ASSESSMENT AND REFLECTION

According to this study, formative assessment and reflection are challenging elements of computer-assisted project based learning. At first the teachers were confused and anxious about these features. Few concrete examples were available to them at the initial stages of the study; the teachers associated the formative assessment with evaluation of their instruction and were nervous about implementing it; the students seemed to lack the metacognitive abilities to answer general questions about learning; and the language barrier was an issue. To resolve some of these problems, written formative assessment and reflection questions were made very specific and germane to the instructional settings. Students were also offered the choice of answering in their native language. In the beginning class, the final reflections were translated into Spanish.

While reviewing the data after the study, I realized that the teachers had also done a number of informal oral and written formative assessments without actually calling them that. In the intermediate class, Catherine had one-on-one feedback sessions with students and regular group meetings for evaluation and reflection upon their work. In addition, she had students write about their skills and goals at the beginning of the term.

All of these were different types of formative assessment which called attention to, and gave students credit for, their learning process. Similarly, Amanda repeatedly checked in with students, encouraged them to reflect on their learning, and solicited evaluation of class activities via collaborative translation. As these results show, formative assessment and reflection do not have to be in a written format.

For the most part, students responded enthusiastically, volunteering plenty of information. The mid-session formative assessment in Amanda's beginning class turned out to be a "valuable tool." It helped her to better understand student needs and attitudes about the class. Following the first formative assessment, Amanda made several changes in instruction which led to more positive affective outcomes. Students also seemed to be more optimistic after the opportunity to reflect on what they were learning. When final reflections were administered students were again given the choice of responding in their own language. Half the students in the beginning class chose to respond in English and five out of seven used English in the intermediate class. Thus, the final reflections became opportunities for language practice.

IMPLICATIONS

According to this study, and the results of previous research, relevant real world problems, organized teams, and formative assessment and reflection are useful strategies in the implementation of project based learning. In addition, the findings of this study indicate that it is possible to do computer-assisted project based learning in a mixed level and mostly beginning language class with less than optimal conditions. In the beginning class of this study, organized teamwork combined with collaborative translation made

project based learning more feasible. The combination of instructional features facilitated work on a fairly complex project that sustained student interest.

Selection of Real World Problems

Past research suggests that student choice in project themes is less important than their actual interest in the project themes (Milner-Bolotin, 2001). Project themes need to be relevant to students' lives, and complex enough to drive inquiry (Barron et al., 1998). Students also need to engage in the projects for a sufficient period of time (Blumenfeld et al., 1991). The results of this study lend support to these claims. The teachers worked hard and took some time to negotiate project themes with their program coordinator. They did not provide a choice for students. However, they did ask students about their interests and made their decisions on the basis of student interests and abilities. Their careful selection of relevant and interesting project themes helped to sustain student motivation. Teachers implementing computer-assisted project based learning may want to consider the strategy of selecting generative project themes for their students in consultation with them but not necessarily letting them choose any topic.

Organized Teamwork and Cultural Consideration

The strategy of creating teams with role assignments can be an effective tool for computer-assisted project based learning in second language classrooms. Certain cultures are more hierarchical. Students may be accustomed to following teachers' orders and working individually in the classroom, but that does not mean that they do not have experience collaborating with others in school, in professional, and in familial contexts

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outside the classroom. In this study, the teachers connected the concept of teamwork to student backgrounds by comparing the teamwork in project based learning to family structures and to the teams many of the students developed in their work as fruit and vegetable packers. In the mixed level beginning class, teams were asked to appoint a leader and to assign alternating roles of "speaker," "writer," and "time checker" to team members. The teacher also had her students organize themselves by their specific area of knowledge and interest within the project theme. These team strategies helped to unite and organize students of this study. Similar strategies of connecting teamwork to student experiences outside the classroom and of assigning member roles may be useful in future applications of computer-assisted project based learning.

Translation

According to this study, a select amount of strategic translation may be a useful for computer-assisted project based learning in a mixed level mostly beginning second language class. Translation can be used strategically to facilitate complex English language dialogue and to promote wider class participation. It can be used to facilitate formative assessment and reflection. It can also be employed as a tool for language learning. For example, in this study, translation was as means of studying vocabulary. Most notably, collaborative translation, where students worked together to interpret and communicate ideas in the second language, seemed to offer opportunities for language development.

To future researchers of instructional innovations, I would like to pose the question, what instructional features are provided in the methodology that support the learner and help sustain learner motivation? With theoretical shifts and the advent of technology, a wave of innovative task, project, problem, content, and inquiry based methodologies have entered into the field of computer-assisted language learning in the last decade. They share the features of authentic materials, student centered learning, and choice, yet many of them make the same mistakes we have been making since Kilpatrick first coined the word, "Project Work" in 1933.

It is not enough to hold student centered classes and to incorporate authentic materials. As Barrons et al. (1998) and Edelson et al. (1999) and so many others have found, a number of specific instructional features are needed to support the learner as they venture into authentic tasks and problems. Let us not use our instructional innovations as excuses for unstructured learning environments lest we find ourselves reverting back to traditional ways. The uniqueness of second language learning should not prevent us from learning from and exchanging knowledge with scholars in disciplines outside second language acquisition. Language learning like science is also a "process of deducing rules, making predictions and testing them as we go about living**."** (Edelsky et al. 1991), but we have learned from the past that discovery whether it be in a lab or on the World Wide Web, needs to be scaffolded and guided. In the 21st century, effective learners rather than knowledge collectors are needed more than ever (Derry, 1990). Therefore, our goal is not to create dependent learners, but we need to *enable* learners to develop the skills for independence.

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We need to move our research forward in light of new insights into the major roles of motivation, confidence, and anxiety and in light of constructivist interpretations of learning which support student centered instruction. What is needed as we embark on this voyage is systematic research of instructional features that contribute to positive affective outcomes and learning in student centered learning environments. Hilton-Jones (1988) and Luke (2002) both report on studies of project work and inquiry based classes where students who had a choice of what to study experienced "project fatigue" and "laziness." These studies leave us with many provocative questions. What opportunities were there for reflection and metacognitive development in these classes? Were the project themes complex and meaningful enough to sustain student attention? Milner-Bolotin found in her 2001 study of project based instruction in an undergraduate physics class that student choice of a project theme did not have a significant effect upon motivation. What affected students more was their interest in the project. These results are consistent with the previous studies in the sciences (Barrons et al., 1998). The organization of projects around meaningful problems, complex enough to drive inquiry, is a key instructional feature. Milner-Bolotin's study should be a model for future research as we continue to explore the many exciting instructional innovations that have emerged with philosophical shifts and recent technological advancements. More studies are needed to focus on particular instructional features within constructivist-based methodologies such as project based learning.

For starters, in the area of computer-assisted project based learning, further research is needed to focus on the instructional features of organized team collaboration, formative assessment, and reflection. In particular, research is needed on the design,

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implementation, and effects of these features in different second language contexts. For example, it is necessary to explore strategies for organized team collaboration within second language contexts where more than one language is spoken. Overall, longitudinal studies are needed to better understand the learning quality and potential of computer-assisted project based learning within different second language contexts. This study has captured the experience of two classes in one short summer session. Other studies in second language have focused on semester long project based learning classes. Yet, language learning is a process which inevitably takes time, regardless of the methodology.

LIMITATIONS

This study has several methodological limitations. Generalizability is limited in this study because of the unique nature of the research setting. The research took place in two free Community Based adult English as a second language classes with relatively broad curriculum guidelines, no grading, and minimal assessment requirements. The results may be very different in the presence of grading and traditional testing, or narrow curriculum guidelines. Student attitudes may also be very different in programs where they are required to attend or are paying for their studies.

Another methodological limitation relates to student and teacher reports. Student reports through background questionnaires, formative assessments, reflections, and interviews may have been affected in part by "social desirability." They may have had a desire to please the teachers, researcher, or program personnel involved in the study. This issue was addressed in the study by speaking to students about the importance of being

honest and the right they had to give their personal opinions. It was also clearly explained that their interviews were confidential. Some students did express negative opinions and give constructive criticism indicating that their comments were sincere; however, I recognize that given the circumstances of the study, social desirability probably played at least a small role in the results.

Similarly, teacher reports may have been influenced by the novelty of a "new research based method" and the desire to "get it right" (Amanda and Catherine, Electronic Journals, June 26). I addressed this issue by explaining to the teachers that the study was not an evaluative study. I explained that the purpose of the study was not to prove the positive affects of the methodology; the purpose was to describe the experience with the methodology. In addition, I began each part of the data analysis by temporarily setting aside any global statements teachers made about project based learning. I focused first on outcomes that were demonstrated and reported across instruments. Then I looked at the connections that were made between these outcomes and specific instructional features. Lastly, I integrated these results with general statements teachers had made about the approach. In this way, I was able to sift out any reports that were not supported elsewhere in the data. Although the teacher reports of the experience proved to be some of the most insightful and best ways of articulating the experience, their reports were not the initial driving force in my interpretation of the data. The study focused simultaneously on learner perceptions, actions, and reports.

In sum, the results of the study are intriguing and pave the way for more extensive, longitudinal work on the issues that emerged.

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Appendices

English Language Consent Form

CONSENT FORM (page 1)

ENGLISH AS A SECOND LANGUAGE LEARNING THROUGH COMPUTER
ASSISTED PROJECT BASED LEARNING

You are invited to participate in a study of language learning in a computer assisted classroom taught using a methodology called Project Based Learning. My name is Rebekah Sidman-Taveau and I am a graduate student at The University of Texas at Austin. This study is part of a dissertation research project. You are being asked to participate in the study because you are enrolled at the Salinas Adult School. If you participate, you will be one of approximately 40 people in the study.

If you decide to participate, all information you provide will be kept confidential*. You will be included in the following activities. First, I will ask you to complete a short questionnaire in order to obtain general background information. The questionnaire will take approximately 15 minutes. Second, I will observe half of the class sessions, tape-record all of the class sessions and take notes on what I observe. At the end of the semester, I will ask 10 people to interview with me using Spanish and English. The purpose of these interviews will be to obtain the interviewees' reports of their learning, reactions to the class, and feelings about their learning while working in the class. It will take approximately 30 minutes. In addition, I will review the written work you produce during the semester. The purpose will be for me to investigate the results of the class lessons. You are not required to answer every question in the questionnaire and interviews.

There are no known risks to participating in this study. All data for the study (the tapes, your work and the interview transcripts) will be kept securely in a file cabinet in my private office. Any information you provide in this study may be helpful in designing more effective computer assisted language lessons.

*Any information that is obtained in connection with this study and that can be identified with you will remain confidential and will be disclosed only with your permission. Your responses will not be linked to your name in any written or verbal report of this research project. Your decision to participate or to decide not to participate will not affect your present or future relationship with The Salinas Adult School, and will not affect your teacher's assessment of your work.

If you have any questions about the study, please ask me. If you have any questions later, you may contact me at rtaveau@yahoo.com , or contact my supervisor, Dr. Marilla D. Svinicki at msvinicki@mail.utexas.edu. If you have any questions or concerns about your treatment as a research participant in this study, call Professor Clarke Burnham, Chair of the University of Texas at Austin Institutional Review Board for the Protection of Human Research Participants at (512) 232-4383. You will be given a copy of this consent form for your records.

<div align="center">CONSENT FORM (page 2)</div>

You are making a decision whether or not to participate. Your signature below indicates that you have read the information provided above and have decided to participate in the study. If you later decide that you do not want to participate in the study, simply tell me. You may discontinue your participation in this study at any time.

_____

Printed Name of Participant

_____   _____

Signature of Participant   Date

_____   _____

Signature of Investigator   Date

_____   _____

Spanish Language Student Consent form

APRENDIZAJE POR MEDIO DE COMPUTACION DE INGLÉS COMO SEGUNDO IDIOMA

Se le invita a tomar parte en un estudio del aprendizaje del idioma Inglés. Utilizando una computadora con el programa Metodología llamada Proyecto el Aprendizaje Basado. Mi nombre es Rebekah Sidman-Taveau y yo soy una estudiante graduada en La Universidad de Texas en Austin. Este estudio forma parte de un proyecto de investigación de disertación. Usted es pedido tomar parte en el estudio porque usted esta matriculado en la Escuela de Adultos de Salinas. Si usted participa, usted será uno de aproximadamente 35 personas en el estudio.

Si usted decide participar, toda información que usted proporcione se mantendrá confidencial*. Usted será incluido en las actividades siguientes. Primero, pediré que usted complete un cuestionario corto para obtener información general de fondo. El cuestionario tomará aproximadamente de 10 a 15 minutos. Segundo, observaré la mitad de las sesiones de la clase, la cinta registra todas las sesiones de la clase y toma notas de lo que observo. Al fin del semestre, yo preguntaré a 10 personas para entrevistar utilizando el idioma Español y el Inglés. El propósito de estas entrevistas será de obtener los informes de entrevistados de su aprendizaje, las reacciones a la clase, y su aprendizaje al trabajar en la clase. Tomará aproximadamente de 30 minutos. Además, revisaré el trabajo escrito que usted produce durante el semestre. El propósito será para mí investigar los resultados de las lecciones de la clase. Usted no es requerido a contestar cada pregunta en el cuestionario y entrevistas.

No hay ningún riesgo conocido al tomar parte en este estudio. Todos los datos para el estudio (cintas, su trabajo y los expedientes de entrevista) serán mantenidos confidencialmente en un archivador en mi oficina privada. Cualquier información que usted proporcione en este estudio puede ser útil en la computadora más efectiva intrigante las lecciones ayudadas del idioma.

*Cualquier información que se obtiene con respecto a este estudio y eso se pueden identificar con usted permanecerá confidencial y será revelado sólo con su permiso. Sus respuestas no serán incluidas a su nombre en ningún informe escrito ni verbal de este proyecto de investigación. Su decisión de participar o decidir no participar no afectará su presente o la relación futura con La Escuela de Adultos de Salinas, y no afectará su evaluación de maestro de su trabajo.

Si usted tiene una pregunta acerca del estudio, por favor pregúnteme a mí. Si usted tiene cualquier pregunta posterior, usted me puede contactar en rtaveau@yahoo.com, o

contacte a mi supervisor, Dr. Marilla D. Svinicki en msvinicki@mail.utexas.edu. Si usted tiene cualquier pregunta o concierne acerca de su tratamiento como un participante de investigación en este estudio, llame Profesor Clarke Burnham, Chair of the University of Texas at Austin Institutional Review Board for the Protection of Human Research Participants en (512) 232-4383. A usted se le dará una copia de esta forma del consentimiento para su registro.

SPANISH TRANSLATION OF CONSENT FORM (page 2)

Usted tomara una decisión de participar o no participar. Su firma de abajo indica que usted ha leído la información proporcionada arriba y ha decidido tomar parte en el estudio. Si usted decide luego que usted no quiere tomar parte en el estudio, simplemente me dice. Usted puede discontinuar su participación en este estudio en cualquier tiempo.

_____
El Nombre impreso de Participante

_____   _____
La firma de Participante   la fecha

_____   _____
La firma de Investigador   la fecha

APPENDIX B: STUDENT BACKGROUND QUESTIONNAIRE

English Language Version of Student Background Questionnaire Page 1

<div style="border:1px solid black">

<u>**Student Background Questionnaire**</u>

<u>**Directions:**</u> Please fill in the blanks below. All information on this questionnaire will be kept confidential.

1. Name (First and Last) _____

2 Nationality_____

3. Age _____   **Gender:** Female_____Male_____

4. Are you a parent or guardian? If so, how many children do you have under your care? What are their ages?

_____

5. Language (s) Native:_____**Other:**_____

6. Employment (please check below)

_____ Employed (please list job title)_____

_____ I work at home (homemaker)

_____ Unemployed (please list former job)_____

_____ Other (please explain) _____

7. How long have you been in the CBET program?_____

8. Other Education (Please check below)

_____ Elementary School

_____ High School

_____ Other English Schools (please list)_____

_____ Other (any training or other types of education)_____

</div>

9. Internet Experience. <u>Please check the category that best describes your level</u>:

___ <u>Novice</u> (I have never used the Internet)
___ <u>Beginner</u> (I have received some Internet instruction or tried it at least once)
___ <u>Intermediate</u> (I have received some Internet instruction or worked on the Internet more than a few times.)

10. Computer (word processing) Experience. <u>Please check the category that best describes your level</u>:

___ <u>Novice</u> (I have never used a computer before)
___ <u>Beginner</u> (I have received some computer instruction or tried it at least once)
___ <u>Intermediate</u> (I have received some computer instruction or worked with a computer more than a few times)

<u>Directions</u>: On a scale from 1 (no chance) to 5 (completely certain), How confident are you of being able to successfully complete the following English reading, writing and speaking tasks? <u>Write any number between 1 and 5 in the blanks below.</u>

1	2	3	4	5
No chance	Some chance but only with lots of help.	Good chance if I had some help.	Fairly Certain	Completely Certain

<u>Reading English on the Internet</u>

___ 1. Read and comprehend the state standards for elementary school education.

___ 2. Conduct a search in English on the Internet.
___ 3. Search in English on the Internet for lessons to help my child/children in school.
___ 4. Read an English language web page.
___ 5. Select useful resources from an English language web page.
___ 6. Navigate through an English language web site.
___ 7. Guess meanings in context in an English language website.
___ 8. Interpret images in English language texts on the web.
___ 9. Use images to understand English language texts on the web.

Writing in English on the Computer (word processor)

___ 10. List ideas in English.
___ 11. Copy information from the Internet on the computer.
___ 12. Write English language titles.
___ 13. Create lessons in English for my child (or children).
___ 14. Write about my learning in English.
___ 15. Select images from the Internet to support my English language writing.

English Language Version of Student Background Questionnaire Page 3

<u>Speaking English in class and with peers</u>
___ 16. Participate in a class discussion in English.
___ 17. Discuss a class assignment in English with a partner.
___ 18. Work on a group assignment in English.

<u>Overall</u>
__19. Help my child (or children) with their schoolwork.

Bilingual Student Background Questionnaire Page 1

Student Background Information
Cuestionario sobre el conocimiento del estudiante

Please fill in the blanks below. All Information on this questionnaire will be kept confidential.
Por favor contesta las preguntas. Todo la información será confidencial.

1. Name/*Nombre*: _____

2. Nationality/*Nacionalidad*: _____

3. Age/*Edad*: _____   Gender/*Sexo*: ☐ Female/*Femenino*   ☐ Male/*Masculino*

4. Are you a parent or guardian? *¿Eres un padre o guardian legal?* ☐ Yes/*Si*   ☐ No

4b. If so, how many children do you care for and what are their ages?
   ¿Si lo eres, cuantos niños tienes y sus edades? _____

5. Language (s)/*Idioma (s)*: _____   Other/*Otro*: _____

6. Employment/*Empleo*:

☐ Employed (please list job title)
   Empleado (favor escribe tu trabajo): _____

☐ I work at home (homemaker)/*Yo trabajo en la casa*

☐ Unemployed (please list former job)
   No Trabajo (donde trabajabas antes): _____

☐ Other (Please explain)
   Otro (por favor explica): _____

7. How long have you been in the CBET program?
   ¿Por cuanto tiempo as estado en el programa de CBET?: _____

8. Other Education/*Otro educación*:

☐ Elementary School/*Primaria*   ☐ Middle School/*Secundaria(grados 7,8)*

☐ High School/*Preparatoria*

☐ Other English School/*Otras escuelas donde has estudiado ingles*: _____

☐ Other (any training or other types of education)/*Otros (alguna entrenamiento o cualquier otra clase que*

   has tomado: _____

9. Internet Experience/*Experiencia con el Internet*:

☐ Novice (I have never used the Internet)/*Novato (nunca he usado la Internet)*

☐ Beginner (I have received some Internet instruction or tried it at least once)
   Principiante (Ya he tratado de entrar a la Internet y tengo conocimiento como usarla)

☐ Intermediate (I have received some Internet instruction / worked on the Internet more than a few times)
   Avanzado (Yo tengo conocimiento como usar la Internet y se como entrar a los programas)

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10. **Computer (word processing experience)/***Experiencia usando procesador de palabras***:**

☐ Novice (I have never used a computer before)/*Novato (nunca he usado una computadora)*

☐ Beginner (I have received some computer instruction before or tried it at least once)
Principiante (Yo he recibido algo de instrucción en computación o he usado una vez)

☐ Intermediate (I have received some computer instruction or worked with a computer fore than a few times)
Avanzado (Yo he recibido instrucción en computación o he usado una computadora algunas veces)

Directions: On a scale from 1 to 5, how confident are you of being able to successfully complete the following English reading, writing and speaking tasks? Write any number between 1 and 5 in the blanks below
Instrucciones: In una escala del 1 al 5, que tan confiado te sientes de completar la siguiente lectura, escritura, y expresiones en ingles? Escribe cualquier número del 1 al 5 en los espacios de abajo

1	2	3	4	5
No Chance *No puedo*	Some chance but only with lots of help: *Si puedo pero con mucho ayuda*	Good chance if I had some help. *Si puedo pero con algo de ayuda.*	Fairly Certain *Realmente Seguro*	Completely Certain *Completamente seguro.*

Reading English on the Internet/*Leyendo ingles en el Internet***:**

___1. Read and comprehend the stat standards for elementary school education
  Lee y comprende las normas de conducta los estándares por la educación de la escuela primaria
___2. Conduct a search in English on the Internet/*Buscar algo por el Internet en ingles*
___3. Search in English on the Internet for lessons to help my children in school
  Buscar en ingles algunas lecciones para ayudar a mis hijos en la escuela usando el Internet
___4. Read an English language web page/*Lee una pagina de la web en ingles*
___5. Select useful resources from an English web page
  Selecciona recursos que son útiles en ingles de una página de la web
___6. Navigate through an English language website/*Navega a través de un sitio de la web en ingles*
___7. Guess meanings in context in an English website/*Adivina los significados en los contextos en un sitio de la web en ingles*
___8. Interpret images in English language texts on the web/*Interpreta las imagines de los textos en ingles de la web*
___9. Use images to understand English language texts on the web/*Usa las imagines para entender los textos de ingles en la web*

Writing in English on the Computer/*Escribiendo ingles el la Computadora***:**

___10. List ideas in English/*Hacer una lista de ideas en ingles*
___11. Copy information from the Internet on the computer/*Copea informacion del internet en la computadora*
___12. Write English language titles/*Escribe titulos en ingles*
___13. Create lessons in English for my children/*Crea lecciones en ingles para mis hijos*
___14. Write about my learning in English/*Escribe acerca de mi aprendizaje en ingles*
___15. Select images from the Internet to support my English language writing
  Selecciona imagines del Internet para respaldar mi escritura en el idioma ingles

Speaking English in class and with peers/*Expresiones en ingles en la clase y con otras personas***:**

___16. Participate in a class discussion in English/*Participa en las discusiones de la clase de ingles*
___17. Discuss a class assignment in English with a partner/*Discute el ejercicio de la clase con una compañero/a en ingles*
___18. Work on a group assignment in English/*Trabajar en equipo haciendo ejercicios en ingles*

Overall/*En General***:**
___19. Help my child (children) with their schoolwork/*Ayuda mi hijo (hijos) con su tarea*

CONSENT FORM
ENGLISH AS A SECOND LANGUAGE LEARNING THROUGH COMPUTER ASSISTED
PROJECT BASED LEARNING

You are invited to participate in a study of language learning in a computer assisted classroom taught using a methodology called Project Based Learning. My name is Rebekah Sidman-Taveau and I am a graduate student at The University of Texas at Austin. This study is part of a dissertation research project. You are being asked to participate in the study because you are an English as a Second Language teacher practicing the Project Based Learning methodology at the Salinas Adult School. If you participate, you will be one of approximately 40 people in the study.

If you decide to participate, all information you provide will be kept confidential*. You will be included in the following activities. First, you will teach one of your English as a Second Language Learning classes using the Project Based Learning methodology and I will ask you to answer some background questions via electronic mail. Second, I will observe half of the class sessions and ask you to tape-record the class sessions where I am not present. At the end of the semester, I will ask to interview you. The purpose of the interview will be to obtain your reports of student learning, reactions to the methodology, and feelings about their learning while working in the class. I will also ask for your input as a teacher about implementing the methodology. The interview will take approximately one hour. In addition, I will make copies and review the written work of all your students who provide the consent. The purpose will be for me to investigate the results of class lessons. You are not required to answer every background question and nor every interview question.

There are no known risks to participating in this study. All data for the study (the tapes, your work and the interview transcripts) will be kept securely in a file cabinet in my private office. Any information you provide in this study may be helpful in designing more effective computer assisted language lessons.

*Any information that is obtained in connection with this study and that can be identified with you will remain confidential and will be disclosed only with your permission. Your responses will not be linked to your name in any written or verbal report of this research project. Your decision to participate or to decide not to participate will not affect your present or future relationship with The Salinas Adult School.

If you have any questions about the study, please ask me. If you have any questions later, you may contact me at rtaveau@yahoo.com , or contact my supervisor, Dr. Marilla D. Svinicki at msvinicki@mail.utexas.edu. If you have any questions or concerns about your treatment as a research participant in this study, call Professor Clarke Burnham, Chair of the University of Texas at Austin Institutional Review Board for the Protection of Human Research Participants at (512) 232-4383. You will be given a copy of this consent form for your records.

CONSENT FORM page 2

You are making a decision whether or not to participate. Your signature below indicates that you have read the information provided above and have decided to participate in the study. If you later decide that you do not want to participate in the study, simply tell me. You may discontinue your participation in this study at any time.

_____

Printed Name of Participant

_____   _____

Signature of Participant   Date

_____   _____

Signature of Investigator   Date

_____   _____

Teacher Questionnaire Page 1

1. Name (First and Last) _____

2. Student Internet Experience. <u>Please write your estimate of the number of students in your class who fit each description below</u>:

___ <u>Novice</u> (Have never used the Internet)
___ <u>Beginner</u> (Have received some Internet instruction or tried it at least once)
___ <u>Intermediate</u> (Have received some Internet instruction or worked on the Internet more than a few times.)

3. Student Computer (word processing) Experience. <u>Please write your estimate of the number of students in your class who fit each description below</u>:

___ <u>Novice </u>(Have never used a computer before)
___ <u>Beginner</u> (Have received some computer instruction or tried it at least once)
___ <u>Intermediate</u> (Have received some computer instruction on a word processor or worked with a computer more than a few times.)

4. Assessment of student English Language and Computer Abilities

<u>Directions</u>: On a scale from 1 (no chance) to 5 (completely certain), How confident are you that most of your students would be able to successfully complete the following reading, writing and speaking tasks at this time (prior to completing your class)?

Write any number between 1 and 5:

1	2	3	4	5
No chance	Some chance, but only with lots of help.	Good chance with some help.	Fairly Certain	Completely Certain

Teacher Questionnaire Page 2

Reading English on the Internet

___ 1. Read and comprehend the state standards for elementary school education.

___ 2. Conduct a search in English on the Internet.
___ 3. Search on the Internet for lessons to help their children/child with school.
___ 4. Read an English language web page.
___ 5. Select useful resources from an English language web page.
___ 6. Navigate through an English language web site.
___ 7. Guess meanings in context in an English language website.
___ 8. Interpret images in English language texts on the web.
___ 9. Use images to understand English language texts on the web.

Writing in English on the Computer (word processor)

___ 10. List ideas in English.
___ 11. Copy information from the Internet on the computer.
___ 12. Write English language titles.
___ 13. Create lessons in English for my children.
___ 14. Write about their learning in English.
___ 15. Select images from the Internet to support my English language writing.

Speaking English in class and with peers

___ 16. Participate in a class discussion in English.
___ 17. Discuss a class assignment in English with a partner.
___ 18. Work on a group assignment in English.

Overall

__19. Help their children (or child) with schoolwork.

<u>Teacher Background Interview</u>

1. Please describe your teaching and educational background.

2. What are your beliefs about learning?
      A How do people learn in general?
      B. How do people learn a second language?

3. What kinds of problems and possibilities do adult ESL students face in the learning process?

4. How do you see your role as a teacher in the language learning process?

5. Please describe in detail you students' current English language abilities in the class where you will be implementing PBL.

6. Please describe in detail your students' current computer experience, needs and attitudes in the class where you will be implementing PBL.

7. What language related skills do you think your students will learn with the PBL methodology this summer?

APPENDIX F: FORMATIVE ASSESSMENT ONE (BEGINNING CLASS)

<u>What have you learned in this class?</u>

Directions : Choose from the lists below or write <u>other</u> things you have learned.

1. What <u>English vocabulary</u> have you learned?

I have learned _____.

Math words : count, sort, distribute, and divide
<u>Colors</u> – yellow, red, blue, green and pink.
Teamwork words : teams, chairperson, speaker, timer.
Stretch words : roll shoulders forward, backward, shake hands, look close, look far, etc..
<u>Google search words :</u> Mickey Mouse, elephant, horse, other ?

2. What <u>computer terms</u> have you learned ?

I have learned _____.

Mouse, push, click, drag, enter, return, delete, underline, italics, font, style, center, print
copy, drag, shut down , other ?

3. What <u>English reading</u> have you done ?

I have read_____.

the kindergarten math standards
a paper called « Team roles »
a paper called « Who should be in the same group ? »
the Google search page with Azteca images, other?

4. What <u>English writing</u> have you done (by hand and on the computer) ?

I have written_____.

words in Google
words from the English phrase book
the kindergarten math standards
notes on the class , other ?

5. What <u>English listening</u> have you done ?

I have listened to English_____.

Directions from the teacher
class discussions
English letters (for spelling and typing), other?

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¿Que fuel o que aprendi?/What did I learn?

Ejercicio 1/**Exercise 1**
Traza una linea de las palabras de Ingles al Español de abajo
Draw a line from the English words to the Spanish words below.

Chairperson	Copia
Group	Cuando
See you Wednesday	Monitor
Please sign my book	Grupo
What	Imprimir
When	Persona Principal
Where	Buscar en Google
Mouse	Qué
Font	Los veo el miercoles
Print	Computadora
Copy	Por favor firma mi libro
Google Search	Donde
Images	Stilo de letra
Computer	Imagenes
Monitor	Raton
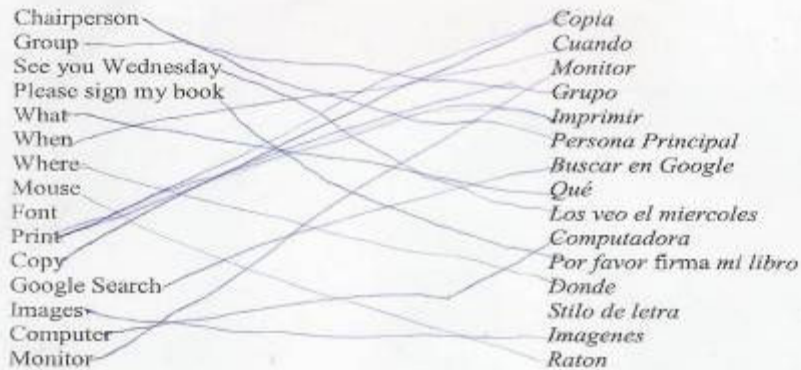
Ejercicio 2/**Exercise 2**
¿Puedes hacer los siguientes en la computadora? Circula una respuesta de abajo :
Can you do the following on the computer? Circle one answer below :

1. *Cambia el estilo de letra de grande a pequeño*   no   sí, con ayuda   (sí)
   Change font size- bigger/smaller

2. *Usa el raton*/ Use the mouse   no   sí, con ayuda   (sí)

3. *Cambia el estilo de letra mas original o bonito*   no   sí, con ayuda   (sí)
   Change the font style/make the pretty

4. *Recorrer o mover ariba y debajo de la pagina*   no   sí, con ayuda   (sí)
   Scroll/move up and down on the page

5. *Imprimir*/Print   no   sí, con ayuda   (sí)

6. *Ir a la pagina Google escribiendo el dirección*   no   sí, con ayuda   (sí)
   Go to Google/Type in the Google address

7. *Presione las imigenes de Google*   no   sí, con ayuda   (sí)
   Click on images in Google

8. *Copia una imagen*/Copy an image   no   sí, con ayuda   (sí)

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APPENDIX H: REFLECTION ASSIGNMENT (BEGINNING CLASS)

Fernando's reflection

<u>*¿Que fuel o que aprendi?*/What did I learn?</u>

<u>Dame tu opinión honesta/Giving your Honest Opinion</u>

¿Que es lo que aprendiste en esta clase?
What did you learn in this class ?

I learn to use the computer and Write the word in English.

¿Que es lo que mas te gusto de esta clase?
What did you like about the class?

My like the computer class

¿Que es lo que quieres cambiar en esta clase?
What do you want to change in the class ?

change For more days a week

¿Como podrias usar la computadora en Junio?
In June, how could you use the computer ?

I need too much help for use the computer.

¿Como podrias usar la computadora ahora?
How can you use the computer now?

I can use the computer in diferent programs and to go to the Internet.

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Formative Assessment Questions: What do you know now? What do you want to learn?

<u>Sample Response to Formative Assessment</u>

- I can use Internet Explorer.
- I can open and close programs.
- I know how to go to Microsoft Word.
- I can use Clip Art
- I know how use Insert WordArt.
- I can save my documents in the computer.
- I want to learn more English in www.ESL café.com
- I can written my name, date and everything in the computer.

APPENDIX J: REFLECTION ASSIGNMENT (INTERMEDIATE CLASS)

Assessing your Learning

1. What did you do in class the last two weeks?

2. What did you learn about making a newsletter?

3. What are the steps for publishing a newsletter?

4. What does each article need to include? (What do you need to think about when you publish an article?

5. What do you look for when you edit your article?

   What kind of English problems?

   What kind of computer format issues?

6. How do you decide the layout of the newsletter?

7. What grammar did you learn while writing your article?

8. What tool bar functions did you use while making the newsletter?

9. What other new computer skills did you learn?

10. What was the most challenging part of the newsletter publishing process?

11. What was the easiest part of the newsletter publishing process?

Training Packet Page 1: Introduction

PROJECT BASED LEARNING

Project Based Learning (PBL) Definition

- A comprehensive method in which students learn while studying real life problems
- Based on constructivist learning theory, which states that students must actively construct their own knowledge in meaningful ways in order to learn.

Main features of the PBL

- Focus on real life problems
- Driven by student interests and needs
- Use of
  - authentic resources and materials
  - models and modeling
  - formative assessment
  - scaffolding
- Teacher as facilitator (coaching, modeling, scaffolding, fading, info. Provider)
- Students create products useful in real life
- Use of reflection

Why use PBL?

PBL
- Has been found to foster higher order thinking skills (comprehending, composing, presenting, analyzing, evaluating) and improves learner motivation.
- Has been shown to be particularly effective when combined with technology
- Focuses on real life problems so that learning is meaningful to the student
- It is well researched and theory based

(Edelson et al., 2001; Barron, 1998; Blumenfeld et al. 1991; Stites, 1998)

PBL DEFINITIONS/NOTES

Project Based Learning A comprehensive constructivist-based approach designed to engage students in the investigation of real world problems (Blumenfeld et a., 1991).

Authentic materials or resources Materials or resources created for use in the world outside of school and not altered for instruction. In ESL these materials are created for and by people of the target culture (in our case American). There are two main advantages of authentic materials. One, they contain relevant cultural information (in the form of physical materials, images, and everyday language such as idioms or abbreviations) that provides clues to the meaning of the texts. Two, what students learn from the materials will be more easily transferred in real life (outside school) than it would be with materials that have been simplified and altered for instruction. PBL teachers simply tasks to help students understand the material rather than altering it.

Formative assessment A type of evaluation of student processes (how they go about learning and doing things). Instead of testing students at the end of an assignment or term (this is called summative assessment), PBL tests students while they are in the process of learning and completing their projects. There are two reasons for this. One, it helps students recognize good approaches to learning. Two, it gives them credit for thorough and thoughtful processes. For example, formative assignment can recognize strategies students have used that will lead to more quality learning. E.g. Did the student memorize a word (short term memory), or did the student really learn the word by creating a definition and meaningful sentence that they will remember and apply?

Scaffolding An effective way to enable students, to help them help themselves. In scaffolding you assess students needs and give them just enough (rather than answering the questions for them) so that they can solve a problem on their own. This gives students more confidence in their abilities. It also allows them to construct their own learning. Instead of just answering a question, they build permanent networks in their brain that they will remember and apply.

There are many means of scaffolding :

Modeling – demonstrate how to do something so that the student can see the whole process and learn to copy it. Or, provide a model (of a final project for example) from which students can set standards for their own project.

Guiding – simplify projects and tasks by separating them into manageable steps. Create metaphors for the process (making a book is like making a cake or building a house, first you have to get all the right materials, then you have to make sure they are good and measure them, etc.). Point out important elements and constradictions (usually where there are mistakes) e.g, if the subject is singular why does it say "go"

Training Packet Page 3: PBL Definitions

Coaching – the teacher encourages students, points out what they are doing well, helps to calm their frustrations and convinces them to keep working (Barron et al. 1998).

Fading – the teacher provides students with assistance in a task and then gradually pulls away as the student becomes more independent.

Just in time teaching – lecturing is okay in PBL, but as much as possible, it should be in response to student questions and/or a means of providing information so that students can complete a task on their own.

Facilitator – Teacher who supports students by providing rich resources, continuous feedback and scaffolding.

Products/Projects – artifacts or materials that students create. These are important for four reasons. One, students learn in the process of making them. Two, they demonstrate what students have learned. Three, they make students feel proud. Four, they can be shared with others and used in the future.

Reflection – when students look back at the process and think about what they did well and what they could have improved, what they learned and what they would like to learn. This has two benefits. One, it helps students to see how they caused their own learning and to recognize strategies that helped them learn. This gives them confidence and recognition of tools that will help them in the future. Two, it allows the teacher to see the process they went through and gives closure to what is often an emotional process for students. Real learning can be a painful struggle and often needs to be processed.

Other – Errors are a natural and important part of the learning process. If students do not make errors you do not know where they need help. Errors must be seen as learning opportunities. Only when you can see where the difficulty lies can you start learning.

Group Work is beneficial because it gets students actively involved and engaged. When students have to articulate things to one another, whether it be their misunderstandings or explanations, it helps them to understand and cement their learning.

Training Packet Page 4: Groupwork

Recommendations for making groupwork work :

1. Appoint a chairperson to monitor time and get others participating in turns. Have the group choose a recorder (to write), checker (to check grammar and spelling), and create other roles that are appropriate to the task.
2. Make success depend on teamwork, e.g. one grade for the team, team has to present in front of class, etc.
3. Model respect for different learning styles. Encourage students to see each others strengths. One person might have a lower level of English, but more maturity and ability to lead and organize a group, for example.
4. Make sure there is one more advanced student and one lower level student in each group. Partner students with low technological skills up with students with high technological skills.
5. Groups of 3- 4 students are ideal. Larger groups are harder to manage.
6. Follow the below procedures as they apply to your class:

Groupwork Suggestions

The First Week and Mid-Semester
- o In the first week of class, give the students a piece of paper upon which they may make group assignment requests (this can be optional since not everyone will know someone). Then assign students to groups with mixed strengths and weaknesses. Appoint the chairperson ahead of time. Read and/or post assignments.
- Each Day
  1. Explain the group assignment (their task) BEFORE students have broken up into groups. Explain the roles of the chairperson, recorder, checker and speaker.
  2. List assignment instructions on the board or an overhead and remind students through out to keep them on task. You can also have one students summarize the task to everyone after you have explained it.
  3. Walk around the room and spend a little time with each group.
  4. Give suggestions to the chairperson about how to monitor the group. Delegate parts of the task to the recorder, checker and speaker. People may not know how to play out these roles the first couple of weeks.
  5. Debrief – you can have group discussions and short writing exercises in which students answer the questions, What worked well in your group today? What problems did your group have?

Training Packet Page 5: Sample PBL Lesson Plan

SAMPLE PBL LESSON PLAN

Ask ahead for students to bring in pictures of their families.

1) DISCUSS CHILDREN AND THEIR SCHOOLWORK

<u>Warm up</u>: Share pictures informally
<u>Pairs interview one another</u>
1. Write questions (suggested below) on board or computer projector.
2. As students arrive explain the questions and have pairs interview one another and write down their answers. If there are odd pairs join in or have students answer the questions on their own.
    *   Do you have children that live with you? If so, how many and what age?
    *   Do you have any younger siblings or relatives (cousins, nieces or nephews) that you take care of? If so, how many and what ages?
    *   Would you like to get your G.E.D. in the U.S., or do you know someone who would?
<u>Class discusses Interview results</u>
1. You may want to model how to summarize the answers (e.g. without rereading the question, etc.) by talking about what your own answers would be.
2. Have students report their partner's answers. Make a chart on the board or projector and fill it in after each report.
3. Incite further discussion. Ask students if they help these kids with their schoolwork, if they know what kinds of things they need to know, etc.

2) STUDY STANDARDS

<u>Teacher present 2 to 3 relevant standards</u> for math education on projector or board

<u>Pairs or groups choose one standard and discuss meaning</u>. Give them the sub standards (e.g. 1.1, 1.2.) and verb lists to work with.
1. Spanish speakers can translate first and then check their translation with the one you have.
2. Students put the standards into simple words (paraphrase) so that they understand and can explain them to the other students.

3) CREATE CLASS SUMMARY
<u>Pairs explain the standard</u> they have paraphrased to class
<u>Teacher writes up</u> brief version of each pair's explanation on the projector and prints out for everyone.

<u>Notes</u>: Stop to address language and computer related questions as they arise!
<u>If extra time</u>, you can have them look for language patterns in the standards. E.g. what are the most common verbs? What tense is used? And why?

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Deberes del Trabajo de Equipo

<u>Chairperson</u>
Organizadora/Organizador- Esta encargada de asegurar que todos participen y que tomen turnos en hablar. Ensegura que todos estan dedicados al trabajo y que esten trabajando juntos.

<u>Speaker</u>
Presentadora/Presentador- Debe preparar un reporte del lo que hizo el grupo en el tiempo de trabajar. El reporte se trata de lo que discutieron, decidieron y en que trabajaron. A veces el reporte se entrega con la maestra y a veces lo tiene que leer a toda la clase. El reporte al final deberia estar presentado en ingles.

<u>Checker</u>
Revisora/Revisor- Esta encargada de revisar el reporte y de corrigir los errores de la gramatica, del deletreo. Y deberia assistir al Presentador con el reporte.

<u>Time monitor</u>
El or la Guardatiempo- Esta encargada del horario del grupo. Tiene que apoyar el grupo en terminar a tiempo.

APPENDIX L: TEACHER EXPERIENCE

The teachers had their own project based learning experience within their PBL teaching experience. The learning experience was replete with the anxiety of applying something new and the high of succeeding. As mentioned, the researcher played the role of a facilitator; coaching the teachers through frustrations and doubts; encouraging discussion; asking curricular questions, providing sample lesson plans and strategies; helping to pre-select course materials; and gradually pulling away assistance as the teachers became more independent and comfortable with the approach. The teachers were not told what to do. The researcher coached the teachers in their decisions, but was careful not to impose her point of view. Additionally, the interaction was primarily directed by teacher needs and interests, not only for constructivist-based reasons, but also out of respect for the teachers. The coordinator had asked the researcher to be careful with the teachers' time (not to assign too many readings, etc.) since they were not paid beyond the class meeting times. However, both of the teachers initiated a great deal of dialogue and questions during the study. Catherine also began doing research on her own and shared several articles she had found online with the group. This active learning and sharing of information continued after the study and in conjunction with a collaborative presentation of the experience at CATESOL on November 1, 2003.

The classroom situations contrasted with one another significantly. Catherine had a group of students in a reliable state of the art computer lab while Amanda had a constant influx of students in an unpredictable classroom environment. Moreover, the teaching choices and planning styles of each teacher were vastly different.

WEEK ONE AMANDA

In the first week, Amanda focused on establishing a community where everyone could get to know one another. She facilitated informal discussion and had students practice working in teams. School paperwork had to be taken care of, and consent forms and background questionnaires were administered. With the help of Rose's Spanish translation, Amanda confirmed that the majority of the students were parents and talked to them about the different grade levels their children were in.

WEEK TWO AMANDA

In the second week (July 2 and 3), Amanda facilitated a discussion about the problem focus, how to help the student's children in American schools. For the students who were not parents, she worked with them to define another problem, the problem of how to advance themselves in the American school system. More specifically they decided to focus on how to prepare for a General Education Degree (G.E.D., the high school equivalency exam). Within these topic areas, Amanda decided to stay with the focus on math: how parents could help their children with math in American schools, and how the students could prepare for the math section of the G.E.D. in English. Amanda also took on the challenge of facilitating the production of a related math book. The next steps were pre-selecting materials and building student skills. With the coordinator's help, Amanda secured copies of English and Spanish translations of the math standards and got blue folders for each student to keep their materials. The researcher produced two idealized book models, got team role descriptions and directions translated into Spanish, and helped the teacher to locate relevant internet sites. Additionally, Amanda began to devote a portion of each class session to building students typing and computer skills so that they would be able to produce a book with words and images.

Computer practice was combined with an exploration of the standards. For example, on July 3rd, Amanda introduced the math standards for grades four and five. Many of her students had children at this level and it was one that would be easier to understand. Since the volunteer lab assistant showed up on that night, Amanda decided to start by having her students type the standards in Spanish and English. The volunteer then taught them how to format the text. Afterwards, Amanda moved the students into the classroom for a "concrete experience" (Amanda, Phone Meeting July, 1), an application of the standards. Each team was given a pile of assorted candies and asked to count, sort, and distribute them evenly among team members. Student initiated discussions on the numbers and colors in English were encouraged. The team writers were asked to take down the steps for distributing the candies and the team speakers were called upon to share the results with the class. Students were encouraged to use English and Spanish,

where necessary, and relevant English verbs were listed on the board. The students were coached to see that the verbs on the board were the same as those they had written in the math standards. The teacher then concluded by explaining that this was the type of thing they could do to help their children in grades four and five.

WEEK THREE AMANDA

After the second week, Amanda began working with the researcher to write out a flexible plan for the summer. This plan was modified on a weekly basis to fit students needs and often changed on a nightly basis as Amanda responded to unexpected events and problems. The following session description illustrates how curriculum decisions were often shaped by nightly circumstances.

On July 9, Amanda devoted the day to organizing the student teams. She handed out a worksheet in which student names and interests (determined by their children's grade levels, or indication of interest in the G.E.D.) were listed in English (See Appendix P "Who should be in the same group?"). Amanda instructed the students to set up their summer teams based on this list. Higher level English speakers helped her record the new groups on paper (since there was no board space that evening). She also asked teams to choose group a name "to promote comradery" (Amanda, Electronic Journal, July 10). For the most part, the students were left on their own to organize these groups while Amanda dealt with the problems of the day:

> The janitor chased kids on bikes out of the courtyard and called the police, and a neighbor wandered into class looking for a lost kid, several students only wanted to work on the computers and ditched class.

> After 6:15 we had a student walk in every 15 minutes. [I] stopped the class and asked them what they wanted to do. Eventually they decided they didn't like the interruptions and elected a person to take care of those who came in late so the groups could continue working.

> Tonite we had little kids coming across the courtyard unattended, no airconditioning and a shooting at another site after class, (Amanda, Electronic Journal, July 10).

Amanda had also planned to discuss the class project, show, and have teams evaluate the "idealized book models" on this night. However, given the night's interruptions, she elected to move the students to the lab instead. In the lab, the students worked on an English language typing program.

The coordinator appeared in class the third week (on July 10) to talk about the shooting with students. Amanda took advantage of her presence to continue instruction in the lab. She asked Rose for help instruct students in a drawing program, which she said would hone their mouse skills. Amanda also had the students practice selecting, copying and pasting images from the Internet. Likewise, a bilingual aide was called in on July 16 to help Amanda go through the "lock down procedure," the steps that should be followed next time a gang shooting occurred at the site (here was another shooting in August).

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WEEK FOUR AMANDA

In the fourth week (July 16 and 17), Amanda began a class routine. From July 16 to July 24, each class had themes related both to the students' everyday lives and to relevant math standards. The themes were working with recipes; budgeting allowance, grocery money, and checking accounts; shopping with coupons in a grocery store, and buying a car with a loan. In each class, teams were given theme based problems which entailed the use of math that was either specified in the standards, or present in the G.E.D. For example, the "Warriors," a team made up of students with children in Kindergarten, were asked to list and count the number of the ingredients in a recipe, and compare the quantities. The "Neighbors" and "Stars," formed through their interest in the G.E.D., were given an actual math problem from the G.E.D. in which they had to multiply fractions in order to determine the appropriate amount of pepper for a sauce recipe (See Appendix Q).

WEEK FIVE AMANDA

Next, Amanda used feedback from the students to guide the design of a standard hand out for the theme based lessons. On July 17, the researcher and coordinator helped administer a formative assessment and solicited written student evaluations of the class in Spanish. The results were translated for the teacher, who decided from then on to create regular worksheets with team directions and vocabulary for the theme based tasks. She asked the researcher and coordinator's assistant to help translate these worksheets so that they could be presented in both languages. The coordinator and researcher also encouraged the teacher to emphasize the classroom talk that was being done in English, things like the teacher's instructions and greetings, and the stretching commands she gave students when they were in the computer lab for any length of time. In the following sessions, the teacher often asked for translations of instructions and listed related English vocabulary, where possible, on the board.

During weeks five (July 23 and 24), the teams were instructed to work together (using the new worksheets) to complete theme specific tasks. Amanda facilitated discussion of the results each day and encouraged students to use English and Spanish, where necessary. After the results were discussed, students were asked to start their books by writing out the steps they used to complete the tasks. The class then moved to the computer lab where students typed up the steps and selected and copied relevant images. It was not possible for them to save their documents on the computer, but Amanda had students print the hard copies of their documents and keep them in their blue folders.

WEEK SIX AMANDA

The sixth week (July 30 and 31) was dedicated to finishing the books. Amanda presented several book models and scaffolded a student discussion of different components of a book: the glossary, table of contents, and cover. Relevant vocabulary was listed on the board in English and often translated. Students were then given an instruction sheet in which they were asked to select vocabulary from past lessons to include in their book. The teacher asked them to type up the select vocabulary in Spanish and English, give the document a title, and select and copy a relevant image. Assistance was provided as requested and students were encouraged to help one another. Similarly, July 31 become a workshop for completing the books. The teacher watched while

students turned on the computers and self started. She encouraged them to share resources and help one another to create personalized covers. Amanda also permitted a "spontaneous printing frenzy" that day (Amanda, Personal communication, July 31). Towards the end of class, Amanda tore the students away from their work to plan a final potluck party. With the researcher's help, she facilitated a discussion in English of the food items that should be brought.

WEEK SEVEN AMANDA

August 6 was the last day of book production. Amanda scaffolded the collating of the books. The students were given copies of each lesson result (the steps they had typed and decorated with images, their glossary, and personalized cover). A band of new students had arrived, so they were given copies of other people's glossaries and covers. Next, Amanda passed out a Table of Contents that listed each lesson theme along with the related standards in English (See Appendix U2). She asked the students to use the table of contents to organize their books. The students worked in teams to collate the books. Once the books had been put together, Amanda asked them to add the appropriate page numbers. Next, she administered a second formative assessment and a reflection assignment (Appendices G and H, respectively).

The last class day, was a day of acknowledgement, sharing, and celebration. After a concluding discussion, students walked over to the daycare, where an audience of children had been assembled around a make shift stage. The students sat with their children and were asked to come to the front one by one to receive their completed books, which had been copied and bounded with transparent covers. As the students came up, the audience applauded. After the ceremony, the children, babysitters and parents were all invited to the potluck party where there was food and dancing.

WEEK ONE CATHERINE

In comparison to Amanda's class, Catherine's class had fewer management. In the first week, the project idea was introduced, consent and background questionnaires were administered, and school paperwork was completed. The teacher focused on establishing a "group feeling" (Catherine, Journal, June 25). She facilitated a discussion about the students' children and families. She also had students read an article about strawberry pickers in Salinas and encouraged them to share their ideas and experiences. At the end of the discussion, Catherine compared the skill of picking to the skill of working with a computer. In subsequent lessons, the teacher concentrated on building students' computer and English language skills. For example, students practiced using the computer mouse and learned the English terms for the different mouse functions.

WEEK TWO CATHERINE

During the second week, Catherine experimented with different project ideas, assessed her students' needs and interests, and etermined the final project focus. On one class day, she introduced the Kindergarten math standards to her students and had the students create activities they could do to teach the math skills to their children. For homework, she asked them to try out the activity with a child. In another lesson, the class began examining the newspaper, Easy English Times, which later became a sample for their final project. Catherine helped the students to read and summarize articles as a class. Then she asked them to work in small groups. She instructed them to select another article and write a summary of its contents. Each group presented their summary to

another group. In addition, the teacher conducted several lessons relating to American culture and entailing the use of the Internet. Students also read about the different types of intelligence and discussed their learning styles. Following these sessions, Catherine did an informal formative assessment where students wrote about their current interests and skills in English and computers (Appendix I). She instructed each student to compose a bulleted list in Microsoft Word and showed them how to insert a picture. After compiling information on the students, Catherine chose the class project: publishing a newsletter. She decided that students should determine the exact content of the newsletter, but continued to scaffold a focus on topics relating to the learning of the students and their children.

WEEK THREE CATHERINE

The third week marks the beginning of the construction of the newsletter and concentration on related higher order thinking skills. Catherine facilitated a discussion in which students examined titles in the sample newspaper and guessed the content of articles. She wrote true and false statements about the articles and had groups create their own statements. Most importantly, she modeled and scaffolded the initial brainstorming of article ideas. Groups of three and four students began drafting their first articles together. Additionally, Catherine conducted skill building and idea generation exercises. The teacher handed out a crossword puzzle with vocabulary and clues related to strategies for going to school and learning English. She asked each student to choose a question about strategies for learning English such as"How long does it take to learn a second language?" and "Does watching T.V. in English help?" Catherine modeled a question and wrote everyone's reply on the board. Each student was then asked to do the same with their peers. When this was done the teacher had students write a paragraph about the results. This became one of the first articles for the newsletter.

WEEK FOUR CATHERINE

The newsletter construction continued in week four with a few interruptions. The school assessment test, CASAS, was administered on the 14th, and students were supposed to listen to another teacher's lecture on the 15th. However, Catherine allowed the 15th to turn into a student initiated workshop, "They were all into either playing with Publisher Newsletter or beginning to write articles from their notes." (Catherine, Journal, July 16). This type of student directed activity continued throughout the week with students working on different stages of their articles. The teacher scaffolded student research online, helped them to edit their writing, and encouraged students to add titles and images to their work. Furthermore, the teacher conducted several lessons on Microsoft Publisher. The class looked at the different newsletter templates, practiced changing font styles and headings, as well as inserting and deleting clip art. All instruction was done in English.

WEEK FIVE CATHERINE

Likewise, week five was characterized by what the teacher described as "tutoring sessions" (Catherine, Journal, July 31). She scaffolded individual students as they edited, chose titles, formatted, and selected images for their articles. Once the majority of the articles were completed, Catherine facilitated a "mock up." She asked each student, or student group, to print their work. The articles were laid out on the table next to the newsletter template they had chosen. Then the teacher facilitated a discussion of the

layout, which required significant higher order thinking skills. Students were asked to think about the main ideas of each article and how they were related to one another. They had to decide what order the articles should take and how the images should be arranged. Afterwards, the teacher coached the students to cut and paste the hard copies into the template. Using the mock up, she encouraged them to think about and play with the article formatting.

WEEK SIX CATHERINE

In the last class of week six there was an interesting turn of events. Using the mock up as their guide, Catherine had planned to work with the students to cut and paste the articles electronically into the chosen publisher template. However, the researcher, who had her only copy of the mock up, had gotten lost on the way in. Coping artfully, the teacher agreed to grant a student request to create calendars in publisher. When the researcher arrived with the mock up, a challenging dilemma occurred. One of the students wanted to add the calendar to the newsletter! Consequently, the teacher initiated a discussion of the logistics of fitting the calendar into the remaining space. She let the students wrestle with the idea in English and then helped them to find a solution.

WEEK SEVEN CATHERINE

Some technical difficulties in the last week led to further changes. The plan of cutting and pasting the articles into the template did not work. It was an arduous task that altered the individual formatting in each article. Therefore, in the last week, Catherine provided time for students to retype and format their articles one by one into the publisher template. By Wednesday of that week, Students had a final version on the computer. The researcher had a computer copy of the newsletter sent to a xerox place just outside of the district. Catherine filled the remaining time with English language and cultural activities (Emily Dickenson poems, Bingo of the U.S. States, and a U.S. State Internet site). A combined formative assessment and reflection assignment was also administered.

On the last day, the researcher brought copies (one color and three black and white) of the newsletter for each student. Catherine called everyone over to the center round table to view the final results. The teacher opened the box and distributed the copies. Comments were elicited from student and the teacher and researcher praised their work. Afterwards, everyone celebrated by at a Mexican restaurant across the street.

Sample Student Language Use June 25 – July 9: Beginning Class

English Vocabulary	Math standards lesson: count, sort, distribute, divide. Group work: Teams, Chairperson, speaker, timer. Stretch words – roll shoulders, shake hands, etc..	7/3
	Google search topics (vocab. & spelling), Mickey Mouse, elephant, horse, purse, chicken, soda etc..	6/25-7/9
Computer Terms	Mouse, push, click, drag, enter, return, delete, underline, italics, font, style	
Reading English	Reading standards, reading English phrases for typing	
Reading English online	Reading images and minimal text in Google sites	7/9
Writing in English	Copying English phrase booklet, copying standards	
Writing in English online	Typing search terms in Google	7/9
Speaking in English	Participating in class discussion, talking in teams, reporting team answers, asking questions to the teacher	6/26-7/9
Listening to English	Directions : for word processing Directions for stretches Directions for group work class discussion Directions for candy activity applying standard English letters (for spelling search terms)	6/25-7/9 6/25-7/3 6/26 6/26 7/9
Second Language Learning & General Learning Strategies	Translation, Selecting language to copy Comparing new information (team roles) to background knowledge (roles for packers in factory) Asking for help (witnessed several instances) Calming self down in order to be able to concentrate (discussed with one student who was nervous about being in new class and using English) Taking notes Pay attention to English alphabet in order to understand search terms and how to write them	6/23 – 7/9 6/23, 7/3 7/9 6/26, 7/9 7/9

Sample Student Computer Use June 26 to July 9: Beginning Class

Word processing skills	Typing, using mouse to move cursor, using arrows to move cursor, highlighting, changing font, changing style to italics, underlining.	6/26,
	Entering to move to another line, centering, and using mouse pad. Using delete and return. Closing programs & windows	7/3 7/9
Programs	Rosetta Stone typing program – positioning hands correctly (2 hands in curved position instead of individual fingers) to type. Sitting up straight to type.	7/9
Internet	Typing URL, searching in google images, scrolling down using the scroll bar, pressing return to start search. Click on image to enlarge. Select image. Drag image. Open Microsoft Word. Enlarge and reduce windows. Drag image to document (copy image), enlarge, and reduce image. Conduct own search in Google.	7/9

Sample Student Language Use June 26 to July 9: Intermediate Class

English Vocabulary	Motto, religion, nearest, barbeque Academic vocabulary of standards and math terms	6/26 7/3
Computer Terms	Mouse functions: point, click, double-click, click & drag Tables, columns, rows	6/23 6/26
Reading English	Article about Strawberry pickers Math standards	6/23 6/26, 7/3
Reading online	URL's, directions on interactive Internet site, scanning for materials on math lesson site	6/26
Writing English	Composing sentences with prepositions Completing sentences with modals and academic topic (standards), taking notes, listing ideas	6/23 7/9
Writing online	Writing in complicated URL's for 4th of July site	7/3
Speaking English	Asking & answering Interview Questions & reporting partner's answers to class Discussing articles (strawberry pickers), handouts (7 intelligences, standards) Discussing standards: meaning, how to teach, etc. Discussing newsletter ideas	6/23 6/26 7/3 7/9
Listening to English	Directions for pair work & discussion of interviews Directions for drawing program, class discussions Direction & discussion of site, discussion of standards	6/23 6/26 7/3
Second Language Learning Strategies & General Learning Strategies	Selecting language for reporting, asking for clarification Relating reading topic & vocabulary to background knowledge, circumlocution (A to describe « barbique) Breaking authentic matieral (lesson web site, standards) down & connecting to background knowledge Following directions Using cognates & Latin roots (L. first letter same) Sharing strategies Taking notes	6/23,6/26 6/26 6/23 6/26, 7/3 6/23-7/9 7/9 7/9 7/9
Higher Order Thinking Skills !	Paraphrasing and applying standards, brainstorming & determining main ideas	7/9

Sample Student Computer Use June 25 – July 9: Intermediate Class

Word processing	Using mouse, making tables, modifying tables Practicing acquired skills: typing, printing, etc…	7/? 6/23-7/9
Programs	Making and moving around shapes and writing sentences in microsoft word drawing program.	6/23
Internet	Copying complicated URLs, pulling up web pages, scrolling thru pages, clicking on links (navigation)	6/26 7/3

Introducción:

Primero queiro agradecerlo por aceptar esta entrevista. Quiero que sepan que el propósito de esta entrevista no es para juzgar su inglés, si no para obtener información sobre las clases de verano. Siéntase libre de responder en inglés o en español como usted quisiera.

La información que usted nos da nos ayudara a describir la experiencia de los estudiantes con el proyecto basado en metodología y ayudara a mejorar la clase de inglés como segundo idioma. No hay respuestas correctas ni incorrectas. Esta es una oportunidad para expresar sus propios ideas.

Toda la información que usted da quedara confidencial y sus respuestas serán anonamas. Usted puede negar a contestar cualquiera pregunta y puede parar la entrevista.

1. ¿Qué aprendió del idioma inglés en esta clase de verano?

   ¿Qué tipo de habilidades usted aprendió de la lectura en inglés?
   <<<   Escritura   >>>
   <<<   Escuchar   >>>
   <<<   Hablar   >>>

2. ¿Qué aprendió sobre la computadora y el Internet durante la clase?

   ¿Qué habilidades aprendió al escribir en la computadora?

   ¿Que tipo de cosas aprendió a hacer en el Internet?

3. Describe como se sentía mientras trabajaba en el proyecto (el libro/la noticia) este verano.

   Por ejemplo, ansioso, frustrado, motivado, animado…

   ¿Cómo cambiaron sus sentimientos con respecto a la clase?

4. Ustedes trabajaran mucho en grupo esta verano ¿Como fue para usted trabajar en grupo?

   ¿Cómo trabajó con los otros estudiantes?

   ¿Qué aprendió al trabajar con otros estudiantes?

   ¿Cómo se sentía a trabajar con otros estudiantes? ¿Por qué?

5. ¿Cómo su experiencia en esta clase a sido diferente de otras clases?

   ¿Que clase de actividades hicieron que fueron diferentes de otras clases?

6. ¿Tiene usted algo que añadir?

Who should be in the same group? (Aliases inserted)

Jose - preschool
Antonio - 6th & kindergarten
Maria - 9th & 4th
Carlos – GED
Arturo -7th & 4
Raquel – G.E.D.
Javier -6 & 4
Betty -Kindergarten& 5th, G.E.D.
Macaria – G.E.D.
Tomas -5th, 6th & Kindergarten
Katia – G.E.D.
Sonia – G.E.D.
Samuel- G.E.D.
Alicia -preschool & kindergarten
Fernando –Kindergarten & preschool
Mario – G.E.D.
Moises- G.E.D
Bertha-
Alberto –
Lorena-

1. What do we have in common in the list?

2. Who is our chairperson (for the summer)?

3. Who is the speaker (for today)?

4. Who is the writer (for today)?

5. Who is the timer (for today)?

6. Who is the recorder (for today)?

7. Which grade should we focus on?

APPENDIX Q: WORKSHEET 2 RECIPE LESSON: BEGINNING CLASS

Worksheet 2: Recipe Lesson Page 1

July 16, 2003

RECIPES

1. After choosing a recipe with your team, answer the questions below.

Group _____ Elementary School

2. What ingredients are in the recipe? List them below.

3. How many ingredients are in the recipe? _____

4. What ingredients does the recipe have the more of (más) ?. What ingredient does the recipe have the less (menos)? Write four sentences.

Examples :   1. The recipe has more _____ than _____.
               2. The recipe has less _____ than _____.

_____

_____

_____

_____

5. What new vocabulary did you use in this lesson?

_____

---

lettce carrots cabags celery mayonnaise

cutting the vegetables   and   mix

the recipe has more lettuce than mayonnaise

the recipe has less mayonnaise than   lettuce

the recipe has more cabages than carrots

Worksheet 2: Recipe Lesson Page 2

July 16, 2003

RECIPES

Group _____ G.E.D.

Read the problem below and then answer the questions:

A student named Alejandra, is preparing sauce (una salsa) for the party. One ingredient in the sauce is half a teaspoon of red pepper (1/2 cucharilla de pimienta). The recipe Alejandra has makes enough sauce for 8 servings (porciones), but she only wants to make 4 servings.

1. What fraction (fracción) of a teaspoon of red pepper should Alejandra use?

2. Did you answer #1? If not, read the hint (pista) below and try again.

Hint : You need one half (la mitad) of ½ a teaspoon of red pepper.

3. Do you understand now? Check the answer below.

 G.E.D. Question Answer

1/4, 0.25, or .25. Since Alejandra is serving four from a recipe designed for eight, she needs 4/8, or 1/2 the amount of each ingredient. One half of 1/2 teaspoon is found by multiplying:

(1/2) x (1/2) = 1/4

4. What new vocabulary is in this worksheet?

The student Alejandra needed a half of teaspoon of red pepper and 1/2 cucharilla de pimienta).
to prepared the
sauce.

APPENDIX R: WORKSHEET 3 BUDGET LESSON: BEGINNING CLASS
(Fernando)

Planificando Cómo Gasta su Dinero con sus Niños
Planning How to Spend your Money with your Kids

Vocabulario/Vocabulary
Presupuesto/Budget –
Planear/Planning-
Gastar/Spend-
Quánto/How Much -
Denero de Bolsillo/Allowance -
Frecuentemente/Often-
Comparar/Comparing -
Mas Grande/Bigger -
Pequeño/Smaller –

asignación ahorro

Level : Elementary (Teaching your kids how to budget their allowance)
Nivel : Primaria (Enseñe sus niños cómo presupuestar su ~~estipendio~~)

1. How much money do you give your kids ? How often do you give your kids money ?
1. ¿Cuánto dinero das has sus niños ? ¿Que tan seguido les das diner has tus hijos ?

2. Alfonso gets $2 allowance and Carlos gets $1.50 allowance. Write two sentences comparing the two. Who gets a bigger allowance ? Who gets a smaller allowance ?
2. Alfonso recibe $2 de domingo y Carlos recibe $1.50 de domingo. Escribe dos oraciones comparando los dos. ¿Quién recibe más dinero? ¿Quién recibe menos?

3. How can you teach your kids how to budget their allowance?
3. ¿Cómo puede enseñar a sus hijo á hacer un presupesto de su dinero?

¿Qué es el primer paso?/What is the first step?
I educate him to not spend too much money

¿Qué es el segundo paso?/What is the second step?
I educate him too save money

¿Qué es el tercer paso?/What is the third step?
I educate him too plann for the future

Escribe los pasos en la computador e inserten las fotos.
Write the steps on the computer and bring in the pictures.

Usando Cupones con sus Niños Para Comprar
Using Coupons with your Kids for Shopping

Vocabulario/Vocabulary
Usando/Using -
Cupones/Coupons -
Comprando/Shopping -
Productos/Products –
Significado de los numeros/Number Sense -
Identificar/Identify –
Valores/Values -
Monedas/Coins –
Valor/Worth -
Pasos/Steps-

Nivel : Primaria/Level : Elementary
Número de sentidos nivel 1.0 para jardin de infantes(Enseñado a sus hijos a contar y a identificar objectos)/Number
Sense Standard 1.0 for Kindergarten (Teaching your kids how to count and identify objects)

1. *¿Cuantos cupones hay ahi?*/How many coupons are there ? There are 12 coupons

2. *¿Cuantos productos hay ahi?*/How many products are there ? There are 7 products
*Número de sentidos nivel 1.0 para grado 1 (Enseñado a sus hijos a contar, leer, y escribir numeros hasta el
100)*/Number Sense Standard 1.0 for Grade 1 (Teaching your kids how to count, read and write numbers up to
100):

3. *¿Cuanto dinero vale el cupon?*/How much money is the coupon worth ? $1.35

4. *¿Cuales cupones van con cuales articulos?*/Which coupons go with which items ? SAVE 35 (Sill
style $1.00 HUGIES

Número de sentido nivel 2.0 para grado 1 (Enseñando a sus hijos como sumar y restar)/Number Sense Standard 2.0
for Grade 1 (Teaching your kids addition and substraction) :

5. *¿Cuanto dinero el* ___$14___ *costaria con un cupon de* ___$12___ ?
How much money would the _____ cost with the coupon for _____ ?

6. *¿Como puede enseñar estas matematicas a sus hijos?*/How can you teach this math to your kids ?.

¿Qué es el primer paso?/What is the first step?
comparar precios

¿Qué es el segundo paso?/What is the second step?
lo yevo a la Tiinda

¿Qué es el tercer paso?/What is the third step?

Escribe los pasos en la computadora e inserten los fotos.
Write the steps on the computer and bring in the pictures.

1

CBET NEWSLETTER
The Sanchez Afternoon Class

SUMMER 2003

Summer classes are very important at the school because my friends and I may stay to use the computers. Our class meets at Jesse Sanchez School in the afternoons. Learning is very important to my friends. This Summer the teacher, Catherine (Alias) , helps us to learn how to use the computer. Each student has the decision to stay or to play for 2 hours. The teacher, makes this possible because everyday is different and interesting during the Summer of 2003. Everyone needs a chance to learn the English language during the Summer. Everyday the teacher gives us an example especially of programs like Healthy families.

Contributors:

(Aliases Inserted Below)
Lorena
Lillia
Juliana
Alicia
Monica
Sarai
Miriam
Marta

Why is the computer important ?

It is important because the technology help us to do some easier. Technology is necessary in the world today and computers are in most electronic devices. Computers can connect us with the whole world making work more efficient and can assist us like a teacher.

Salinas Offers Many Things

Salinas is in the central coast of California.
65% of the people in Salinas are Hispanic.
Salinas is rich in agriculture. We have for example,
lettuce, spinach, strawberries, celery and broccoli.
Most of the people who work in the field are
Mexican.

Salinas isn't big and noisy like San Francisco and Los Angeles. It's a comfortable city especially in the weather. Salinas has many parks, schools ,and churches of many religions. Salinas has important roads. Highway 101 is an important road in Salinas because it connects with other cities. Salinas is growing quickly because the agriculture makes much money.

My Experiences getting the GED..

I am 19 years old and studied in Mexico for 12 years, but I wanted to go to the U.S. When I arrived in this country, I thought, I have never studied in High School in the States but because of my age it was not possible. I went to the Adult School to get information about GED and there they told me about the different programs and Schools for taking the GED class. The next day I went to the school, and I will remember that always. I saw that most of the people were older than me. The next time I was in the class the teacher said you can get the GED in little time.

There are five subjects in the GED; mathematics, language arts, writing, social studies, science and reading. Math was easy, because I like math and in Mexico I was taught well.

Three months after finished the GED in Spanish because I didn't speak English. It was easy and my graduation was June/03. Now, I will start to study in the college and speak English.

Health Programs.

Why is it important to receive education about drug and alcohol free youth Community?

It is important to build families and community organizations to improve the capacity of each person to be safe, disciplined and free from violence, alcohol and drugs.

Why protect our children health and safety.

It is important to provide children and student school and communities the benefits of enhanced and comprehensive education and mental health.

Where are programs for help our children and community?

There are programs and activities that can help promote healthy childhood development and prevent violence and drug abuse.

There are workshops, local agencies and aid groups within Salinas

Adult school and Salinas Union High School. This collaborative effort takes into account the complex interactions of environmental and individual risk.
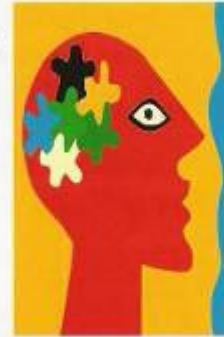
New Forms of Learning

I can practice with more things now because schools have more technology such as computers and their programs that help a lot. The computers can also connect and navigate on the internet with information about cities and continents in the world. This allows us to visit the cities and continents, showing how people live in other countries. It also allows us to stay connected with friends around the world. Computer technology is making work more efficient and assisting us like a teacher. Education is important to me and everybody because it is the foundation of civilization.

Helping your kids with learning

- Homework help
- Teach respect to others by being community member
- Connect to life of kids

Helping your children with homework is an obligation of the parents. The parents are the first people to teach respect of others and also to have a good conduct. Parents need to spend time with their children to help them and have a strong, positive influence.

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Why it is important to learn English

1. It is important to learn English because it is necessary for getting a better job. It is also necessary to communicate with people better, but what is most important is how to understand our children.

2. It is important to learn English to see the doctor and pay the bills, for shopping and to send mail in the post office.

3. It is important to know about the news by watching the TV or listening to the radio or to read a newspaper or only for reading a book or magazine.

4. It is important to learn English for a better life and for your personal needs. Maybe someday you will travel around the world!

Strategies for Learning English

* Watching T.V. is useful for learning English.

* Read books, newspapers, and magazines.

* Remember the first letter of new words to learn vocabulary

* Write letters to your friends and relatives

* Listen to the radio.

* Working together.

* Attend class

* Listen to American Music.

* Use computers.

* Listen more and speak more to improve pronunciation

August 2003

Sun	Mon	Tue	Wed	Thu	Fri	Sat
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24/31	25	26	27	28	29	30

CBET Classes at Sanchez School
Monday to Thursday 1:00 to 3:00 PM
Tuesday & Thursday nights: 5:30 to 8
Classes begin Wednesday August 20

(Aliases inserted)

LOS WARRIORS
GROPS   KINDERGARTEN FERNANDO ALBERTO LUZ LUPE
ARIANA ARICELA SALINAS CALIFORNIA JULIO   31 2003
MI NOMBRE ES ARICELA

NINOS KINDERGARTEN   TITULO
AMANDA
TICHER
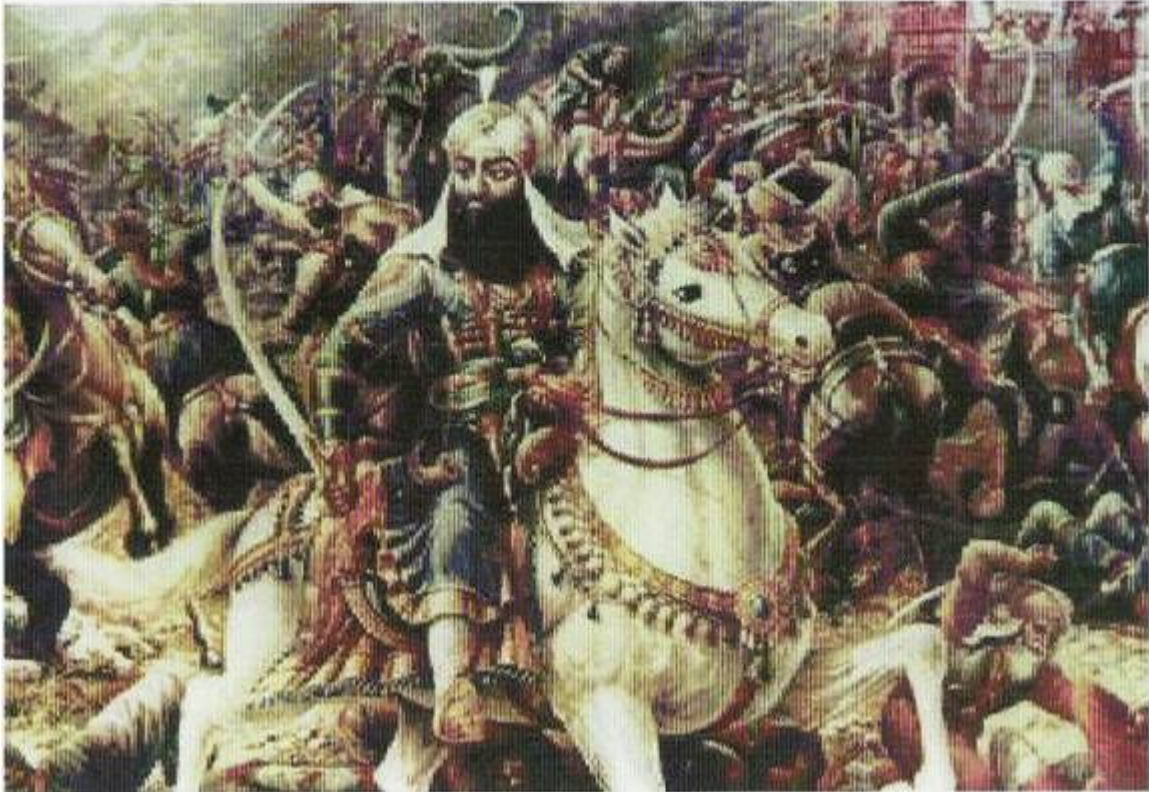
APPENDIX U 2: FINAL BOOK PROJECT: TABLE OF CONTENTS

What is in my Book ? (Table of Contents)

HOW MUCH MONEY DO YOU GIVE YOUR KIDS?I
I GIVE TO HIM 2 DOLLARS
HOW OFTEN DOYOU GIVE YOUR KIDS MONEY?
I GIVE TO HIM EVERY FRIDAY
ALFONSO GETS $2 ALLOWANCE AND CARLOS GETS $1.50 ALLOWANC
WRITE TWO SENTECES COMPARINGTHE TWO.WHO GETS A BIGGER
ALLOWANCE ?
WHO GETS A SMALLER ALLOWANCE?
ALFONSO GETS MORE MONEY

CARLOS **GETS LESS**

MONEY

Planificando como gastar su dinero con sus ninos
cuanto dinero das has sus ninos? que tan seguido les das diner has tus hijos?

2 Alfonso recibe 2 de domingo y Carlos recibe 1 5o de domingo escribe dos
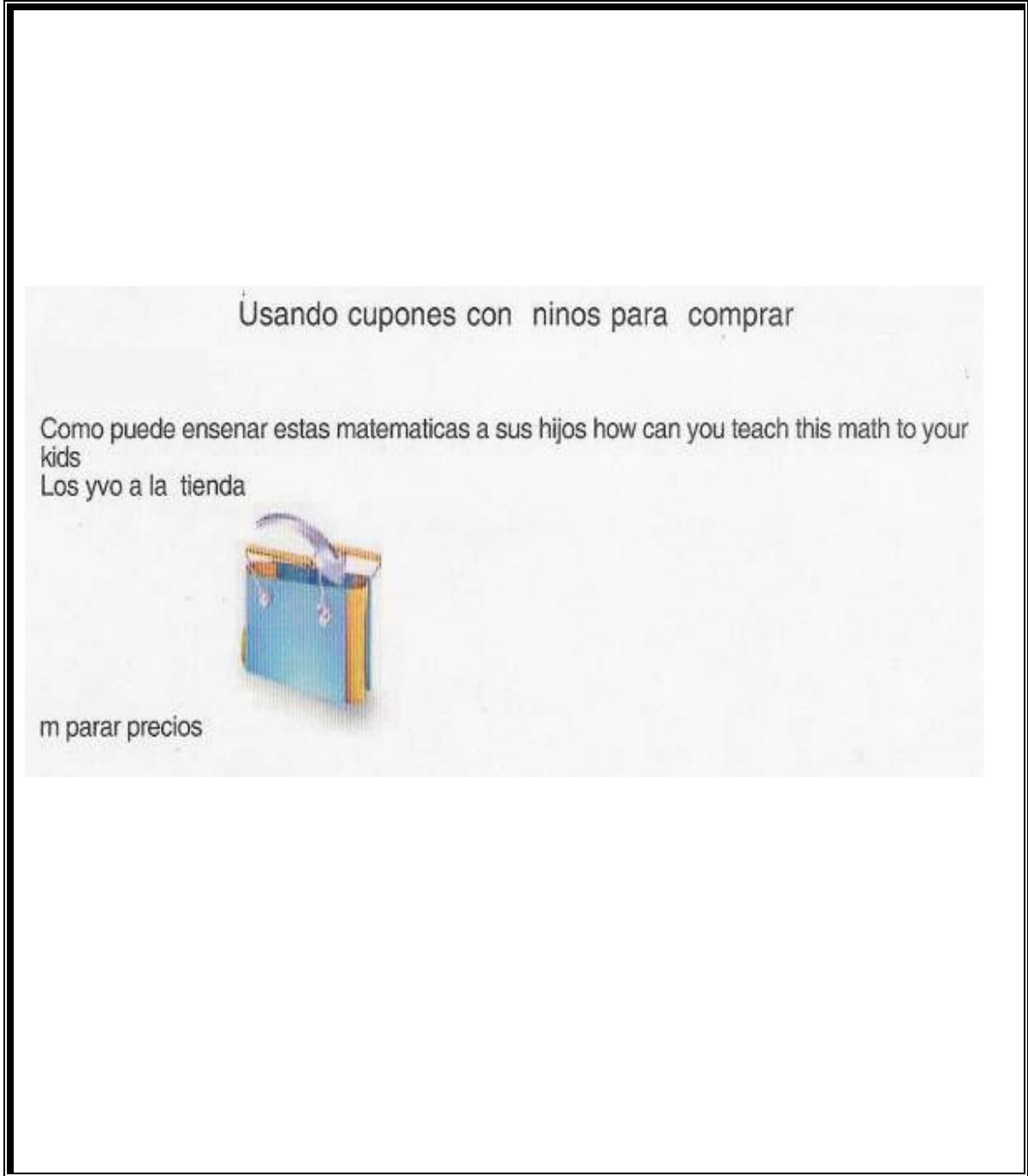oraciones comprando los dos quien recbe mas dinero quien recbe menos?

como puede ensenar a sus hijo a hacer un presupesto de su dinero

que es el primer paso what is 0the third step

Usando cupones con ninos para comprar

Como puede ensenar estas matematicas a sus hijos how can you teach this math to your kids
Los yvo a la tienda

m parar precios

APPENDIX U 6: FINAL BOOK PROJECT: SAMPLE GLOSSARY

(Participant name removed. Alias: Fernando)

GLOSSARY

Add=sumar
Amounts=cantidades
Choose=escoger
classification=clasificacion
compare=comparar
count=contar
explain=explicar
expressions=expresiones
figures=figuras
fill=llenar
find=encontrar
identify=identificar
Know==saber
likely=probable
making==hacer
Organized==organizar
quantities==cantidades
same==mismo
SOLVE=RESOLVER
SORT=TIPO
SUBTRAC=RESTAR
TENDENCY=TENDENCIA

GLOSSARY

USE=USAR

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Vita

Rebekah Sidman-Taveau was born in Palo Alto, California on July 17, 1969, the daughter of Leona Phillips and Jacob Sidman. After completing her work at Amherst Regional High School, Amherst, Massachusetts, she entered Sarah Lawrence College in Bronxville, New York. She received the degree of Bachelor of Arts from Sarah Lawrence College in May, 1991. Following her undergraduate study, she entered New York University in New York City. During graduate school, she was employed as assistant to the registrar at The Americas Society Latin American Art Gallery in New York City. She earned the degree of Master of Arts in Latin American/Caribbean Studies from New York University in January, 1994. During the following years, she was employed as an English as a second language teacher at several intensive language institutes in Austin, Texas. In September 1998, she entered The University of Texas at Austin doctoral degree program in Foreign Language Education. Within the program, she focused on English as a second language teaching and computer-assisted language instruction. While working on her degree at The University of Texas at Austin, she was employed as Assistant Spanish language instructor. In this position, she developed a series of online project based learning language lessons for Spanish and German.

In 2000, she co-presented the electronic poster, "Developing an Electronic Portfolio in ESL Classrooms" at the annual meeting of Computer Assisted Language Instruction Consortium in Tucson, Arizona. In 2001, she co-presented the paper "Constructivist Inspiration: A Project-Based Model for L2 Learning in Virtual Worlds" at

Texas Foreign Language Education Conference, in Austin, TX. Subsequently, this paper was accepted for publication in the Texas Papers in Foreign Language. In 2002, she was invited to present the paper "Teaching Language and Culture with Project Based Learning on the Web" at the American Council for Teaching of Foreign Language Conference in Salt Lake City, Utah. In 2003, she presented the paper, "Fun and Meaningful Learning: Building Bridges with Project Based Learning" at the California Association for Teachers of English to Speakers of Other Languages (CATESOL) in Redwood City, CA. In 2004, she presented the paper, "Creating Community in the Classroom through Team Work" at CATESOL in Santa Clara, CA.

Currently, Rebekah Sidman-Taveau is employed as an English as a second language teacher at Cañada College in Redwood City, California.

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