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**Second Language Collaborative Writing in Face-to-face and Online  
Environments**

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**Second Language Collaborative Writing in Face-to-face and Online  
Environments**

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**Report**

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## **Abstract**

# **Second Language Collaborative Writing in Face-to-face and Online Environments**

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Collaborative writing, the joint construction of a text by two or more authors, is an instructional practice originally used in first language classrooms. More recently, it has been applied in second language (L2) learning contexts. Collaborative writing can take place in the classroom, with pairs or small groups of learners working face-to-face and interacting verbally to make decisions about the content and form of their text. It can also take place in online contexts, allowing larger groups of learners to collaborate on longer texts over a longer period of time.

The aim of this paper is to explore empirical research undertaken on second language (L2) collaborative writing tasks in face-to-face and online environments. Attention is paid to the instructional contexts in which these tasks have been used, including educational settings, learners' proficiency levels, and task types. After these elements are described, the paper integrates and analyzes research concerning the outcomes of collaborative writing tasks, namely the nature of languaging and peer scaffolding, the writing process, language learning, text quality, and learners' perceptions

of collaborative writing. The paper concludes with pedagogical implications and directions for future research.

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## I. INTRODUCTION

### WRITING AND SLA

In the field of second language acquisition (SLA), second language (L2) proficiency has traditionally been defined in terms of oral abilities, and L2 instruction has often favored speaking and listening activities in the classroom. However, writing also plays an important role in language acquisition. Harklau (2002) makes a strong case for writing as a means for language learning, raising the point that some L2 users and writers *learn a language through writing* rather than learning to write only after mastering the language. In a recent piece in the *Journal of Second Language Writing*, Ortega (2012) examines some of the connections between second language literacy and SLA and argues for closer cooperation among researchers working in the two—hitherto mostly separate—fields.

Discussing the role of writing in L2 acquisition, Williams (2012) states, “the permanent written record pushes learners to demand more of themselves regarding language form and the extended time gives them the opportunity to meet this demand” (p. 328). From this perspective, writing activities in the L2 classroom give individual learners the opportunity to produce “pushed output” that stretches their interlanguage and helps them to notice gaps in their abilities, i.e. the difference between what they want to communicate and what they are able to communicate (Williams, 2008). This is an important difference between producing output and processing input. To comprehend input, learners can rely on content words to decipher the meaning of what they are



listening to or reading, focusing lesson issues of syntax or morphology. According to Swain (1985), producing output requires more effort from learners and “may force the learner to move from semantic processing to syntactic processing” (as cited in Gass & Selinker, 2008, p. 326). While opportunities for learners to produce spoken output in the classroom are, of course, important for their L2 development, the chance to write offers them a different but equally important type of benefit. Unlike speaking, the act of writing provides learners with more time to reflect on language before using it, thus allowing learners to consult their knowledge base before deciding on the content they wish to convey or the grammatical forms or lexical items that will best convey that content – a luxury denied them when they take part in real-time speaking activities.

## **COLLABORATION IN THE L2 CLASSROOM**

The reflective nature of writing is one of the factors responsible for the view that writing is an individual pursuit. It is true that most written assignments in both L1 and L2 educational settings must be done individually. However, research on collaboration in writing is making it increasingly clear that having L2 learners write together can facilitate learning and encourage the creation of higher-quality texts by allowing them to pool their knowledge and to discuss both the local and global aspects of their writing. In addition, some L2 learners will need to write collaboratively upon joining the workforce (Bremner, 2010; Wigglesworth & Storch, 2012), and may thus benefit from having opportunities to do so in the classroom.

Collaborative work is common in educational contexts. With the advent of

pedagogical approaches such as task-based learning, pair and group activities have become more prevalent in L2 classrooms, taking the form of oral activities that involve learner-learner collaboration. Collaboration in writing tasks in the L2 classroom has been less prevalent (Storch & Wigglesworth, 2007). However, collaborative writing activities have several potential benefits for L2 learners and writers. Compared to collaborative oral activities, collaborative writing tasks have been shown to encourage a greater focus on form (Niu, 2009). More generally, when collaboration is introduced into the L2 writing classroom, it increases the language-learning potential of writing. Whereas individual writing encourages reflection and pushed output, collaborative writing involves interaction, discussion, feedback, and deeper engagement with the form and meaning of a text.

When learners interact to write a text, they provide each other with “collective scaffolding” (Donato, 1994). “Scaffolding” refers to the support a more advanced learner can offer to a novice. Originally, it was used within the context of tutoring, where the roles of expert and novice are flexible (Wood, Bruner, & Ross, 1976). Donato alters the term slightly, making it specific to an environment where learners of more or less equal levels work together and where the roles of expert and novice are flexible. Collaborative writing can therefore be understood within the framework of Vygotskianism and social constructivism, whereby learners develop their knowledge first in the social sphere and subsequently within their individual minds. Indeed, as Wigglesworth and Storch (2012) point out, most of the research on collaborative writing has adopted a social constructivist framework. Viewed within this framework, learners can pool their knowledge and collectively achieve a goal that they would not be able to achieve individually. There is a

good deal of evidence that supports the social constructivist perspective, and this will be examined in the present paper. First, however, it is important to define exactly what the term “collaborative writing” means.

## **WHAT IS COLLABORATIVE WRITING?**

Storch (2011), one of the leading researchers in the field of collaborative writing, defines it as “the joint production or the coauthoring of a text by two or more writers” (p. 275). A jointly-composed text can be created in a classroom environment, where learners work together face-to-face. It can also be created in an online environment using Web 2.0 tools such as wikis or Google Docs, or Web 1.0 tools such as text or voice chats.

Whether learners work together at school or in a computer-mediated environment, the defining characteristic of collaborative writing involves the notion of authorship. For true collaborative writing to take place, both (or all) of the authors of a text should feel a sense of joint ownership of the text. Whereas in the traditional definition of writing one author is solely responsible for one text, collaborative writing entails what Sykes, Oskoz, and Thorne describe as the “blurring of historical notions of authorship (p. 528).

While a definition of collaborative writing should include joint authorship as a defining characteristic, it can be difficult to pinpoint what exactly constitutes joint authorship. Some researchers (Bruffee, 1984; Harris, 1994) have a relatively loose definition of joint authorship (as cited in Storch, 2012, p. 2). According to one view, even if a single author writes for a particular audience, she is involving that audience as a collaborator in her writing: “writers are in an ongoing (albeit usually internalized) state of

dialogue with their intended reading audience and the context in which the text will be read as they plan and compose the text” (Hirvela, 1999, p. 8). Storch asserts that peer review could count as a form of collaborative writing according to this loose definition; the act of asking another person for feedback or suggestions involves that person in the writing of the text, thus making it a collaborative effort. Storch herself adapts Ede and Lunsford’s (1990) narrower definition, which stipulates three requisites for a writing task to be considered collaborative: meaningful interaction throughout the entire writing process, an equal amount of control in shaping the text, and a single finished product that both (or all) authors are equally responsible for. Noticeably, this definition excludes peer review activities.

Storch asserts that in the case of peer review, a single author lays claim to the text. The argument could be made that a peer reviewer may conceivably count as an author, particularly if her suggestions have a demonstrable bearing on the content and form of the text. Rather than discounting peer review as not falling into the category of collaborative writing, perhaps it would be more appropriate to acknowledge that there are several possible levels of collaboration. Ede and Lunsford (1990) and Storch (2013) adopt a definition that requires a high level of collaboration.

Storch’s contention is that for true collaboration to take place, two (or more) authors need to be involved in the writing of the text from its inception. They should make all decisions, from the brainstorming to the revision stages, together. They should also feel equal levels of control over and responsibility for the text in its entirety. The present paper will adopt Storch’s (2013) definition of collaborative writing. Peer review

activities, while arguably collaborative in nature, will be beyond the scope of this paper. Instead, the paper will focus on studies that have operationalized collaborative writing as two or more learners constructing a text together, beginning with the deciphering of the assignment and ending with the completion of the finished product. These types of activities have many potential benefits for learners that will be of interest to L2 educators.

### **WHY USE COLLABORATIVE WRITING IN THE L2 CLASSROOM?**

There is a small but growing body of research on the merits of collaborative writing tasks in L2 instruction. The main rationale for using such tasks is that collaboration allows learners to provide each other with the support necessary to reach a level of production that is beyond what any of the group's individuals could reach alone. This is the heart of Donato's (1994) term, "collective scaffolding" (p. 51). In Donato's study, American university students studying French worked together to plan out a task. Although the study investigated peer-peer scaffolding in an oral (not written) task, it provides evidence that language learners can help each other solve linguistic problems without the intervention of an instructor acting as the expert. The learners are "individually novices and collectively experts" (p. 46). From this theoretical perspective, the concepts of the novice and the expert take on a new meaning.

As this paper will demonstrate, studies on collaborative writing in classrooms and in online environments have shown that it can encourage language learning (Kim, 2008), the production of higher-quality written products (Fernández Dobao, 2012; Storch, 2005; Wigglesworth & Storch, 2009), and opportunities for students to use linguistic rules they

have learned in class (Lee, 2010). In addition, collaborative writing activities may have positive effects on learners' attitudes and motivation. Student responses to collaborative writing tasks have generally been positive. For example, learners in Shehadeh's (2011) study reported perceived gains in confidence as well as in their speaking and writing abilities. Given these potential benefits, it is important to decide how these types of tasks can best be introduced into classroom instruction.

Collaborative writing tasks have the potential to complement and enhance pedagogically-sound L2 curriculum design practices. Nation and Macalister's (2010) definition of a shared activity, which includes "group composition" (p. 102), seems to capture perfectly many of the traits of collaborative writing:

Shared activities... have several advantages, such as allowing negotiated meaning-focused communication, keeping all learners active, and providing substantial quantity of language input and output. They also allow learners to work at a level beyond their normal level of proficiency. (p. 101)

Many of the characteristics of collaborative writing activities accord with Ellis's (2005) principles of instructed language learning: a focus on meaning, a focus on form, consideration for the learners' developmental readiness to learn certain language forms, and opportunities for output and interaction in the L2. In addition, Storch (2013) notes that collaborative writing tasks fit well into current teaching practices, such as communicative language teaching. CLT places emphasis on communicative competence and negotiation of meaning and form, and the verbal interaction required for learners to

perform a collaborative writing task is an effective way of helping learners develop those skills.

Proponents of cooperative learning practices have also advocated the use of tasks that are frequently employed in face-to-face collaborative writing: the jigsaw (Jacobs, McCafferty, & DaSilva Iddings, 2006) and the dictogloss (Jacobs & McCafferty, 2006). The use of tasks that require learners to work together is not limited to the L2 classroom. Jigsaw tasks, for example, have been successfully used in general education and are a concrete example of how collaborative tasks can be embraced by a wide variety of teaching contexts due to their pedagogic soundness.

Finally, it should be acknowledged that collaborating on a text underscores the social value of writing and can thus help L2 writers develop a sense of audience:

While the writer may compose alone in the actual writing of a text, a social dimension is present that can influence the production of that text. Given this socially oriented view of writing, it would seem to make sense to create more classroom conditions in which students engage directly and productively in dialogue with peers. (Hirvela, 1999, p. 8)

Like any pedagogical tool, collaborative writing must be utilized with consideration for the learners, the learning aims, and the teaching context. The aim of this paper is to examine the instructional contexts in which collaborative writing is used and the types of outcomes that can be expected from implementing it in the L2 classroom. Furthermore, a distinction will be made between face-to-face collaborative writing and

online collaborative writing, and results from studies carried out in the two types of modalities will be investigated throughout the paper.

Because recent advances in technology have made it possible for learners to collaborate in new ways, it is instructive to examine the role that modality can play in learners' collaboration. Previous reviews of the literature (Storch, 2011; 2013) have focused mainly on face-to-face collaborative writing, offering a less nuanced view of online collaborative writing. In her 2011 review of literature, Storch examines the processes and products of face-to-face collaborative writing and then analyzes online collaborative writing studies in a separate section. Storch's 2013 book takes a similar approach. In contrast, this paper will analyze face-to-face and online collaborative writing side by side, thereby treating the environments as variables that can affect how learners engage with the activity. The studies that have been chosen are addressed in the following section.

## **OVERVIEW OF STUDIES ON COLLABORATIVE WRITING**

This paper draws on research from 40 studies on collaborative writing: 21 on face-to-face collaborative writing and 19 on online collaborative writing. While a small number are from published anthologies (Brooks & Swain, 2009; Swain & Lapkin, 2001; Yang, 2008), the majority have been collected from academic journals, with the most cited journals for face-to-face collaborative writing being *The Journal of Second Language Writing*, *The Modern Language Journal*, and *Language Teaching Research*, while *Language Teaching and Technology*, *Computer-Assisted Language Learning*,



*ReCALL*, and *CALICO* have provided the majority of studies on online collaborative writing.

The literature on face-to-face collaborative writing is mostly grounded in SLA, investigating phenomena such as verbal interaction and language learning (e.g., Brooks & Swain, 2009; Kim, 2008; Kim & McDonough, 2008; Watanabe & Swain, 2007). Where text quality has been investigated, there has been an emphasis on accuracy (see, for example, Kuiken & Vedder, 2002). Only a handful of studies have looked at issues that are more firmly situated within the field of L2 writing, such as sentence complexity (Fernández Dobao, 2012; Storch, 2005; Wigglesworth & Storch, 2009) or content and organization (Shehadeh, 2011) in L2 writing. These four studies are from *The Journal of Second Language Writing*. More research in this vein is needed to provide a clearer picture of the effects of collaboration on how L2 learners learn to write (as opposed to how they learn linguistic forms), and the increased focus on L2 writing that has recently appeared in the literature is a welcome trend. Nevertheless, because of the overall emphasis on issues related to SLA in the literature on face-to-face collaborative writing, it should be noted that this paper will, due to its source material, reflect this emphasis.

Unlike in studies on face-to-face collaborative writing, language learning has generally not been a focus of studies on online collaborative writing (a notable exception being Castañeda & Cho, 2012). Studies on online collaborative writing have focused, to a large extent, on learners' writing and revision behavior (Arnold, Ducate, & Kost, 2012; Elola & Oskoz, 2010; Kessler, 2009; Kessler & Bikowski, 2010; Kessler, Bikowski, & Boggs, 2012; Kost, 2011; Lee & Wang, 2013; Lee, 2010; Mak & Coniam, 2008; Woo,

Chu, & Li, 2013). This research provides some useful insight into how learners go through stages of writing such as brainstorming, drafting, editing, and revising. These elements are largely missing from studies on face-to-face collaborative writing.

## **CHARACTERISTICS OF FACE-TO-FACE AND ONLINE**

### **COLLABORATIVE WRITING**

Fung (2010) has identified several of the defining characteristics of face-to-face collaborative writing: mutual interaction, negotiation, cognitive conflict (i.e. the result of learners' conflicting views), and shared expertise. Many studies have investigated collaborative writing tasks in the classroom (see, for example, Storch, 2005). As learners work together to write a text, they often engage in discussion about both content and formal language features. Such discussion may require them to take part in different speech acts (e.g. agreeing or disagreeing with their peers' suggestions; Gutiérrez, 2008). Because they are collaborating at the same time and in the same place, they are able to engage in discussions, ask for assistance, and provide each other with feedback in real time.

As learners work together to compose a text, they engage in verbal interaction to formulate their ideas and translate them into the appropriate words on the page. While much of this discussion naturally focuses on content, it has been repeatedly shown that learners engage in what Swain (2006) calls *linguaging*. According to Swain, linguaging entails using language as a cognitive tool rather than merely as an instrument of meaning making. The simplest of definitions would be to say that linguaging takes place when

learners use language to discuss language (as opposed to content). Through languaging, "...ideas are crystallized. They become available as an object about which questions can be raised and answers can be explored" (p. 97). Therefore, languaging can regulate learners' thinking as they navigate their way through a task.

If languaging refers to the phenomenon of using language to talk about language, then the language-related episode (LRE) can be seen as a quantifiable unit of this phenomenon. Swain and Lapkin (1995) define an LRE as "any part of a dialogue where the students talk about the language they are producing, question their language use, or correct themselves or others (as cited in Swain & Lapkin, 1998). Through the analysis of transcripts of learner talk, many of the studies on face-to-face collaborative writing have investigated the number and nature of LREs learners produced as well as their impact on language learning.

LREs can also take place in online collaboration, but only if certain tools are used. The use of synchronous computer-mediated communication (SCMC), such as voice and text chats, allows learners to discuss their writing in real time and thus to produce LREs (e.g. Tan, Wigglesworth, & Storch, 2010; Yilmaz, 2010). Similarly, Google Docs (Kessler et al., 2012) gives learners the opportunity to view writing and editing as they are taking place and thus allows them to communicate in real time.

Synchronous modes of online communication are used in a small minority of studies on online collaborative writing. The majority of studies have utilized an asynchronous tool known as the wiki. A wiki is defined as "a freely expandable collection of interlinked Web 'pages', a *hypertext system* for storing and modifying

information—a *database*, where each page is easily editable by any user with a forms-capable Web browser client” (Leuf & Cunningham, 2001, p. 14; italics in original). Because a wiki allows learners to write as well as to go back and revise or edit their own or their peers’ work, this tool offers a potentially productive environment for learners to collaborate with each other. Unlike in synchronous modes of communication, learners constructing a wiki can see their current draft while also accessing previous drafts, but cannot see each other’s writing as it takes place. As a result, wikis generally give rise to asynchronous discussion (facilitated by discussion pages) or to revision after the fact rather than real-time discussion of language and content. This is an important distinction that affects how learners engage in the process of collaborative writing.

Another important aspect of wiki-based writing that sets it apart from other types of collaborative writing is the ability, made possible by the wiki environment, for larger groups of learners to collaborate. Whereas learners writing collaboratively in face-to-face environments almost always work in dyads (some exceptions being the learners in Fernández Dobao, 2012; Fernández Dobao & Blum, 2013; and Kuiken & Vedder, 2002), learners working on wikis generally work in groups of at least three learners. In one case, forty learners worked together to create one wiki (Kessler, 2009; Kessler & Bikowski, 2010). Wikis are also suitable for longer-term projects because learners can save their drafts and make additions or changes to the document at any time. A corollary of this is that many writing tasks in wiki-based studies have extended for two weeks or longer. In contrast, learners collaborating face-to-face usually complete their text in one sitting.

In summary, the characteristics of face-to-face and online collaborative writing environments differ in a few significant ways, and these differences can have an impact on how learners engage with both the writing task and with each other as they work to create a written product. In addition, different modalities may be chosen by instructors for different purposes. For example, face-to-face activities can be suitable classroom exercises for raising learners' awareness of form while also requiring them to attend to meaning. They also give learners an authentic reason to interact with each other verbally. Online collaboration may be more appropriate for learners who live far away from each other and who may find it difficult to meet outside of class (Elola & Oskoz, 2010) or who are doing an online course (Kessler, 2009). It can also be used to allow learners from different institutions to collaborate with each other (Lee & Wang, 2013). The differences between face-to-face and online collaborative writing will be explored further in the following sections.

## II. INSTRUCTIONAL CONTEXTS

This chapter will describe the instructional contexts in which studies on L2 collaborative writing have been conducted. Attention will be paid to educational settings, learner proficiency levels, and task types.

### EDUCATIONAL SETTINGS

Studies on collaborative writing have investigated learners ranging in age from primary school students to adults. While several studies on online collaborative writing have been conducted in foreign language (FL) contexts in the U.S., there has been a predominant focus on ESL/EFL classrooms in studies on both face-to-face and online collaborative writing. This section will summarize the educational settings that have been represented in studies on collaborative writing.

#### *Face-to-face*

While studies using face-to-face collaborative writing have been conducted in a number of settings, the majority have investigated learners of English as a second or foreign language, as contrasted with learners of other languages. Brooks and Swain (2009) and Watanabe and Swain (2007) looked at adult ESL learners in Canada. Studies on EFL learners include those by Kuiken and Vedder (2002), who studied L1 Dutch high school students in the Netherlands, and Shehadeh (2011) and Storch and Aldosari (2013), who looked at L1 Arabic university and college students in Saudi Arabia. Storch, who

has addressed this subject more than any other researcher, has been involved in studies that have focused on adult ESL learners in Australia (Storch, 2001; Storch, 2002; Storch, 2005; Storch, 2008; Storch & Wigglesworth, 2007; Wigglesworth & Storch, 2009).

Research on collaborative writing in non-ESL/EFL settings include those conducted in Canadian French immersion settings by Kowal and Swain (1994) and Swain and Lapkin (1998). Other studies in this context have investigated how learners jointly process feedback they receive on collaboratively written texts (Lapkin, Swain, & Smith, 2002; Swain & Lapkin, 2002; Tocalli-Beller & Swain, 2005).

A few studies have looked at university SL and FL learners studying languages other than English. Fernández Dobao (2012) and Fernández Dobao and Blum (2013) observed intermediate-level university students learning Spanish, while participants in Leeser's (2004) study were relatively advanced university students enrolled in a Spanish-language content class on Latin American geography. Two studies have looked at university learners of Korean as a second language: Kim (2008) and Kim and McDonough (2008).

### ***Online***

Most studies on online collaborative writing have dealt with ESL/EFL learners or with L1 English FL students in American universities. ESL studies include Kessler et al. (2012), who looked at Fulbright scholars in an English for Advanced Purposes (EAP) class. A larger number of studies have been conducted in EFL settings, encompassing primary, secondary, and post-secondary education. Mak and Coniam (2008) and Woo et

al. (2013) conducted studies of primary school children learning English in Hong Kong. Lund's (2008) learners were high school EFL students in Norway. Chao and Lo (2011) and Lee and Wang (2013) conducted their studies in Taiwan with university students. Kessler (2009) and Kessler and Bikowski (2010) investigated a wiki project involving advanced English learners, who were also pre-service English teachers, in a B.A. program in Mexico. Miyazoe and Anderson (2010) investigated how upper intermediate Japanese learners of English used a wiki for translation exercises. Bradley, Lindström, and Rystedt (2010) looked at advanced learners of English taking an English for Specific Purposes (ESP) course in Sweden.

The majority of studies conducted in foreign language settings have taken place in U.S. universities. Arnold et al. (2012) and Kost (2011) looked at intermediate level learners of German studying at North American universities. Castañeda (2011), Castañeda and Cho (2012), and Lee (2010) examined elementary-level learners of Spanish at U.S. universities, while Elola and Oskoz (2010) focused on advanced Spanish learners. Similarly, Ducate et al. (2011) investigated the use of collaborative writing tasks in intermediate French, German, and Spanish classes at U.S. universities. One exception to the general foreign language focus on North American learners is the study by Tan et al. (2010), who investigated L2 Chinese learners in Australia.

It is clear that collaborative writing has been used in several different L2 educational contexts and with learners of different ages and proficiency levels. Studies have involved primary school learners (Mak & Coniam, 2008; Woo et al., 2013), slightly



older Grade 8 learners (Kowal & Swain, 1994; Swain & Lapkin, 1998), high school students (Kuiken & Vedder, 2002), university FL students (e.g. Leeser, 2004), and university SL students (e.g. Storch, 2001; Storch, 2002). The majority of these studies produced positive results in either language learning, text quality, or student perceptions (and, often, in more than one category). Given that the studies included students from several instructional levels, this body of research suggests that collaborative writing activities need not be reserved for advanced learners who are more adept at writing and discussing in the L2. However, the effects of learners' proficiency levels on the outcomes of collaborative writing assignments should be taken into account in order for educators to be able to make informed decisions about how to implement these tasks in their classrooms.

## **LEARNERS' PROFICIENCY LEVELS**

The majority of studies on collaborative writing have investigated learners at an intermediate level or above. However, a small number studies have focused on beginning learners. Viewed as a whole, this body of research suggests that the ways in which learners engage in collaborative writing, and the benefits they take away from it, are somewhat dependent upon their level of proficiency in the L2.

### ***Face-to-face***

As Storch (2013) notes, one problem concerning research on collaborative writing is the lack of a clear definition of what terms such as "intermediate" actually mean.

Sometimes these terms are backed up with standardized test scores or other measures of proficiency, but other times, they are not. In the absence of such concrete information, any conclusions about the effects of proficiency level must be taken with a grain of salt. In this section, researchers' pronouncements about their subjects' proficiency levels will be accepted at face value. In general, findings from these studies indicate that this pedagogical approach can work well with students who are at a low-intermediate level or higher.

### *Beginning and Low Intermediate Levels*

DiCamilla and Anton (1997) looked at 10 adult learners in an intensive, beginner-level Spanish class. The main purpose of this study was to determine the role that repetition plays in learners' dialogue as they work to collaboratively write a text. Although the researchers did not expressly set out to discover whether this type of writing task is appropriate for this instructional level, excerpts of student-student interaction show that learners scaffolded each other and experienced LREs, often arriving at correct resolutions. Much of their interaction took place in the L1 (English), which allowed them to engage in metalinguistic discussions. However, long stretches of their interaction also took place entirely in the L2, as they offered ideas, repeated them, and reformulated them before committing them to paper. Similarly, the beginning-level learners in Tan et al.'s (2010) study who worked face-to-face also conducted most of their discussion in English while working on writing tasks in Chinese. From these two studies, it seems that learners at this level working in an FL context may benefit from being able to discuss language

issues with each other in their native languages. It is less likely that they will experience the benefits of using the L2 to perform certain functions such as expressing agreement or disagreement, questioning each other, or defending their choices. These benefits may be more pronounced for higher-level learners. Beginners can nonetheless profit from the experience of being able to enlist each other's expertise when attending to form and lexis.

Shehadeh (2011), who also looked at collaborative writing for lower level FL learners, investigated the collaboration of L1 Arabic speakers as they wrote English texts, the majority of which were narrative or descriptive in nature. Based on their standardized test scores, the learners in this study were considered to be at a low intermediate level. They regularly wrote texts throughout the course of a 16-week semester. 20 worked individually while 18 worked in pairs. Unlike most studies on face-to-face collaborative writing, the learners in this study were not audio-recorded during the writing process, preventing further analysis of the nature of the students' interaction. Nevertheless, holistic assessment of all of the learners' first and last pieces of writing demonstrates that working in pairs led to significant improvements in the areas of content, organization, and vocabulary. Furthermore, those who worked in pairs expressed positive feelings about the experience of writing collaboratively, acknowledging that they found it beneficial for their oral and written communication skills as well as for their confidence.

Learners in the Canadian French immersion context (Kowal & Swain, 1994; Swain & Lapkin, 1998; Swain & Lapkin, 2001) may also be seen as belonging to low-intermediate category. The learners in these studies used their L1 (English) and L2 (French) to communicate with each other as they wrote their texts. The collaborative

tasks encouraged these learners to consult outside knowledge sources (i.e., dictionaries and the teacher; Kowal & Swain, 1994), generate and test their hypotheses about the L2 (Swain & Lapkin, 1998), and engage in language-related episodes (LREs) that sometimes led to language learning (Swain & Lapkin, 2001). In these studies, the learners scaffolded each other and often came to correct solutions to their linguistic problems.

Based on the above studies, it can be concluded that face-to-face collaborative writing tasks can be beneficial for even lower-proficiency learners, provided that they can interact with each other in the L1. These learners can offer each other support as they attempt to solve language problems. Limited command of the L2 means that they may not be at a level where they can use the L2 to perform speech acts such as asking for assistance, offering suggestions, or defending their choices.

Collaborative writing research on beginning and low-intermediate students has resided primarily within FL learning contexts. In the future, researchers may wish to investigate whether and how collaborative writing benefits beginning L2 learners in SL contexts where learners cannot draw on their L1s in interaction.

### *Intermediate and Advanced Levels*

The majority of studies on face-to-face collaborative writing have used intermediate and high-intermediate/advanced learners as subjects (Brooks & Swain, 2009; Fernández Dobao, 2012; Fernández Dobao & Blum, 2013; Kim, 2008; Storch, 1998; Storch, 2001; Storch, 2005; Storch, 2008; Wigglesworth & Storch, 2009). The

results of these studies provide some strong evidence that collaborative writing tasks can be beneficial for intermediate-level students.

In Brooks and Swain's (2009) study, four intermediate-level ESL students worked in pairs to write a story in response to a picture prompt. When producing LREs, the learners focused more on grammatical form than on lexis. Other studies have similarly shown that as learners become more proficient, they show greater attention to grammar than vocabulary when discussing language with their peers (Leeser, 2004; Storch & Aldosari, 2013). The learners also successfully resolved more than half of their LREs while writing. One of the two pairs correctly resolved considerably more than this: 81% of form-related LREs and 83% of vocabulary-related LREs. The posttest scores of all four participants showed that learners retained these correct resolutions one week after the writing task, which suggests that the LREs did indeed lead to language learning. While these results are encouraging, the small number of participants (four) in the study caution extending the study's generalizability to other instructional contexts.

Like Brooks and Swain (2009), Kim (2008) used a pretest/posttest design as well as transcripts of learner interaction to determine the effects of collaboration on language learning among intermediate-level L2 learners of Korean. Unlike Brooks and Swain, Kim used a control group of learners working individually and an experimental group of learners working in pairs. The learners working in pairs correctly resolved more than half of their linguistic difficulties, while learners working individually, whose LREs were captured through a think-aloud protocol, resolved fewer than half. In addition, Kim also found that learners working in pairs performed better on immediate and delayed

vocabulary posttests. These results are in line with those of Brooks and Swain (2009): they suggest that discussing language through the act of writing collaboratively facilitates language learning.

Similar to Kim (2008), Fernández Dobao (2012) used a control group and experimental groups to compare the effects of individual and collaborative writing. In this case, the focus was on text quality rather than language learning, so pre- and posttests were not used. In the study, 111 intermediate-level L2 learners of Spanish worked to write a text based on a series of pictures. In the control group, learners worked individually. In one of the experimental groups, learners worked in pairs, while in the other, learners worked in groups of four. The results showed that pairs generally performed better on their written tasks than individuals, but the difference was not significant. Groups performed significantly better than both pairs and individuals. They also correctly resolved a significantly higher number of LREs than pairs. Therefore, while collaborative writing in pairs was somewhat beneficial for the intermediate-level learners in this context, working in larger groups led to even better texts and more opportunities for LRE resolutions, due to a larger number of sources of expertise.

Storch (2005) also investigated the effects of collaborative writing on text quality. In her study, intermediate-level ESL learners in Australia worked either in pairs or individually to complete a written data summary task. Storch found that pair-produced texts were of a higher quality according to a holistic assessment and exhibited more accurate and complex sentences than individually-produced texts. Pair interaction was

found to include instances of collective scaffolding. Finally, the majority of the learners expressed positive attitudes about collaborative writing.

Wigglesworth and Storch (2009) analyzed the interactions and written texts (argumentative essays) of 144 Australian ESL learners working either individually or in pairs. The learners' English proficiency, as evidenced by TOEFL and IELTS scores, indicate that they were at a suitable level to enter an English-speaking university, thus placing their overall proficiency at a higher level. The study found that pairs produced a significantly larger number of error-free T-units than individuals. This study and the ones previously cited show evidence that learners who already have strong language abilities in the L2 can help each other work at a higher level of proficiency than either individual could do alone.

Collaborative writing can be effective in helping learners achieve greater accuracy in their texts. It can also be beneficial for learners when navigating an assignment in terms of interpreting the task and deciding how to carry it out. This can be seen in Yang's (2008) study. Unlike most studies on face-to-face collaborative writing, where learners write their texts in one sitting, Yang's longitudinal case study involved long-term collaboration on group assignments for content courses at the university level. Two groups of four members each worked together over the course of one semester to write a term paper (first group) and a marketing project (second group). This study actually straddles the line between face-to-face and online collaborative writing, as learners discussed the task orally but also communicated by email. Face-to-face group discussions enabled the learners to interpret their understanding of the task, to confirm with each

other how they should approach the writing task, and to make preliminary decisions regarding content and organization. Importantly for a discussion on proficiency levels, Yang's study has implications for advanced language learners in content classes. The author concludes that the study "suggests the importance and educational value of group work in university mainstream courses for facilitating university students, especially ESL students, to better understand the course content and to present their content knowledge in appropriate language and form" (p. 163).

The above studies provide evidence that collaborative writing can work well with intermediate and advanced L2 learners, including those in SL (and not only FL) contexts. Specifically, collaborative writing tasks can encourage them to focus on form, help them produce higher-quality texts, and facilitate language learning. Through collaborative writing, students have the opportunity to use the L2 for diverse authentic purposes such as expressing agreement and disagreement, asking questions, and explaining their choices (Wigglesworth & Storch, 2012). For learners involved in more challenging writing tasks for content classes, working collaboratively can allow them to give each other meaningful support needed to fulfill their tasks, support they would lack if writing alone.

## ***Online***

### ***Beginning and Low Intermediate Levels***

While the majority of studies on online collaborative writing focus on intermediate and advanced L2 learners, a small number focus on beginning and low-intermediate students. These include Castañeda (2011), Castañeda and Cho (2012), Lee



(2010), and Tan et al. (2010). The first three studies deal with L2 learners of Spanish while the last looks at L2 learners of Chinese.

In Tan et al.'s (2010) study, 12 beginning L2 learners of Chinese worked in pairs to complete composition, editing, and translation tasks. Each pair did two versions of each task: one face-to-face and one using synchronous computer-mediated communication (SCMC). Chat scripts of their interactions show that the learners mostly used English to communicate with each other, both when using SCMC and when working face-to-face. Indeed, the type of interaction in face-to-face and SCMC collaborative writing among beginning learners is similar in that learners in both types of tasks engage in dialogic interaction in the L1. This seems natural given these students' low level of proficiency in the L2. Importantly, the researchers found that the mode of communication (i.e. face-to-face or SCMC) had a decisive effect on the learners' patterns of interaction, i.e. the extent to which they exerted an equal amount of control over the task and the extent to which they actively listened to and engaged with each other's ideas. This will be elaborated upon in a later section that specifically addresses patterns of interaction.

While Tan et al. (2010) compared collaboration in face-to-face and SCMC environments, other studies looking at beginning learners collaborating online have featured wiki tasks. Castañeda (2011) showed that instruction using wikis and blogs combined with videos were helpful in introducing beginning Spanish learners to the distinction between the preterite and imperfect aspects in Spanish—a distinction that is generally covered at more advanced levels. Learners in the experimental groups, which

used blogs and wikis, performed significantly better on one of three posttests dealing with recognition of these two forms of verb aspect than learners who had worked individually using traditional tools to write (pen and paper or word processors). It should be noted that while learners in the wiki group outperformed the learners using traditional writing tools, learners in the blog group scored the highest. Because most of the differences did not reach significance, the study does not provide strong evidence that collaborative writing benefits Spanish L2 learners with regard to learning the targeted language forms.

Unlike Castañeda's (2011) study that employed control and experimental groups, all of the learners in Castañeda and Cho's (2012) study wrote collaboratively using wikis. Over the course of a semester, 53 university students in an elementary-level Spanish class worked in groups of three or four to write four stories based on YouTube videos. Pre- and posttests were used to measure language gains. Posttest scores showed that learners made significant gains in grammatical knowledge. Unfortunately, as there was no control group, it is impossible to determine whether these gains were due to the treatment or simply to the effects of normal instruction. Surveys revealed that many learners appreciated the opportunity to use what they had learned in class and found it helpful to see how other learners had edited the collaborative text. However, many learners also expressed a lack of confidence in their own writing and editing abilities.

Castañeda and Cho's (2011) findings regarding learner perceptions were echoed in Lee's (2010) study of another group of beginning Spanish learners studying at the university level. In this study, 35 students worked in groups of four or five to complete four different writing tasks. While most of the learners reported enjoying the experience

and found it beneficial, more than half were hesitant to edit what their peers had written. Affective factors may have an impact on lower proficiency learners, causing them to feel some degree of inhibition when attending to form in their peers' contributions. Unlike face-to-face interaction, where learners are working in real-time and edits begin as verbal suggestions that can be discussed before being finalized, online writing relies on learners to make changes to stretches of text that have already been written by others. Students may feel uncomfortable making such changes.

### *Intermediate and Advanced Levels*

Most studies investigating collaborative writing in online environments have tended to focus on intermediate or advanced L2 learners. These include Arnold et al. (2012); Bradley et al. (2010); Ducate et al. (2011); Elola & Oskoz (2010); Kessler (2009); Kessler & Bikowski (2010); Kessler et al. (2012); Kost (2011); and Miyazoe & Anderson (2011). Not surprisingly for research focusing on advanced L2 learning, all of these studies were conducted with university students.

Some studies have investigated the editing behavior of intermediate L2 learners as they collaborate using wikis. Arnold et al. (2012), for example, investigated the writing and perceptions of 53 FL learners in three university German classes as they worked over the course of a few weeks to create wikis. The assignment required learners to write about a cultural or historical topic that was linked to a novel that they had read or were going to read for class. In this study, learners edited and revised both the content and form of their peers' work. Generally, they focused their content revisions on the parts of

they text they themselves had individually written; they focused to a lesser extent on revising the content of their peers. There was less of a discrepancy between peer-edits and self-edits when dealing with form (i.e., out of the total number of edits, the percentage of form-focused peer-edits was similar to the percentage of form-focused self-edits). These results, when compared to studies showing lower level learners' reluctance to edit each other's work, suggest that proficiency level may have an effect on how willing learners are to edit their peers' grammar.

Arnold et al.'s (2012) findings are echoed in Kessler's (2009) study of 40 Mexican EFL learners, who worked together to create one wiki on a topic related to their class. Analysis of the wiki pages showed that form-focused peer-edits greatly outnumbered form-focused self-edits. It seems that, unlike the lower-level learners in the studies conducted by Castañeda and Cho (2012) and Lee (2010), more proficient learners are less hesitant to correct each other's errors. This may be due to a higher level of confidence and lower affective filter stemming from their more advanced language proficiency.

In addition to editing behavior, research has examined learners' perceptions of online collaborative writing. Ducate et al. (2011) investigated perceptions of 30 intermediate L2 learners of German, French, and Spanish who took part in group wiki projects. Most learners reported positive experiences in working with the wikis and felt that the project allowed them to put into use some of the linguistic structures they had learned in class. When citing problems, learners mostly mentioned technical and logistic aspects of the project, not elements of the actual writing or interaction. Although roughly

one fifth of the learners stated that they would prefer to work alone rather than collaboratively, there was no mention of learners feeling hesitant to edit each other's work.

Some learners' preference to work alone is also seen in Elola and Oskoz's (2010) study on collaborative argumentative essay writing among eight advanced L2 learners of Spanish, who wrote first in pairs and later individually. According to questionnaires, they cited benefits from their peers' editing, but also claimed to prefer working alone, noting, in particular, that individual writing allowed them to find their own voice and relieved them of having to defend their writing choices to others. It is likely that the search to find one's own writing voice in an L2 may become of greater concern only when learners have reached a certain level of proficiency.

Some studies have investigated how intermediate L2 learners deal with language problems when writing collaboratively online. Kost (2011) investigated the writing of eight intermediate German students as they worked in pairs to write essays using a wiki. According to the researcher, these learners' form-focused revisions were highly successful. As is the case with face-to-face collaborative writing, it seems that proficiency level is a predictor of successful solutions to linguistic problems. Learners in this study also expressed an appreciation for having their work edited by their peers.

Bradley et al. (2010) analyzed the wiki pages of 54 highly advanced Swedish software engineers enrolled in an ESP course. The learners worked in pairs, groups of three, and groups of four to complete four written assignments. Although they received little instruction on how to write these assignments, learners in more than half of the

groups collaborated well, treating their text as the work of one collective author. Excerpts from the wiki pages show that learners' revisions attended to sentence-level linguistic items such as plurals, articles, and word choice (e.g., "effect" vs. "affect," p. 257). Thus for these advanced learners, the opportunity to collaborate allowed them to pool their linguistic resources in order to refine their texts.

As learners at this level work on their texts together, they are generally successful at solving their linguistic problems. This is similar to intermediate and advanced learners in face-to-face studies. In face-to-face studies, learners have been found to solve more than half of their LREs, and in some cases, many more (Brooks & Swain, 2009; Fernández Dobao, 2012; Kim, 2008; Kim & McDonough, 2008; Leeser, 2004; Storch & Aldosari, 2013). Similar results have been found in studies on online collaborative writing that have analyzed learners' accuracy when editing each other's work. In the studies by Arnold et al. (2012) and Kessler (2009), learners were accurate slightly over 50% of the time when they edited their peers' work, while in the studies by Kessler et al. (2010), and Kost (2011), these figures were, respectively, greater than 70% and 80%.

In general, these studies show that learners at an intermediate level or above who write collaboratively in online environments seem more willing to edit each other's formal errors than lower-level learners. More often than not, they can successfully correct each other's errors. Furthermore, data from questionnaires and surveys show that L2 learners seem to have a mostly positive view of their collaborative writing experiences.

The above studies offer some insight into how collaborative writing tasks in face-to-face and online environments tend to work for learners at different proficiency levels. Some researchers have also compared subjects at different proficiency levels, while others have chosen to investigate how learners in mixed-proficiency pairs and groups work together. These studies will be dealt with in the following section.

### **PROFICIENCY DIFFERENCES WITHIN STUDIES**

The following studies have attempted to ascertain the effects of proficiency level on learners' interaction, language learning, and text quality. This has been accomplished by having learners at different levels perform the same task or by having learners work in mixed-proficiency pairs or groups.

#### ***Face-to-face***

It is possible that proficiency level may influence the nature of learners' discussion and use of language when they work collaboratively. Lapkin et al. (2002) conducted a study where four pairs of learners completed both a dictogloss and a jigsaw task after watching a video lesson on French pronominal verbs. The researchers found that the more proficient dyads used a greater number of different lexical items and used pronominal verbs more frequently than the less proficient dyads. Glendinning and Howard (2003) compared the interactions of three groups, each consisting of three learners, as they performed a jigsaw-like task. One group was low-intermediate, one was intermediate, and the last was advanced. The researchers found that the advanced learners

focused on content more than language, while the opposite was true of the low-intermediate learners. While both of these studies were quite small in scale, they offer some insight into how more advanced learners may notice and use language forms ignored by less proficient learners. These learners may also be able to attend to content to a greater extent than less proficient learners, presumably because fewer of their attentional resources are drawn to issues of form.

Leeser (2004) studied 42 students taking a content-based Spanish class at a U.S. university. After a grammar review, the learners worked in pairs to perform a dictogloss task. The pairs were classified as high-high, high-low, and low-low. In analyzing the transcripts of the learners' interaction, Leeser coded their LREs as either focusing on grammar or on lexis, and further coded them as either correctly solved, incorrectly resolved, or unresolved. The learners' transcribed interactions showed that proficiency level was directly proportional to the mean number of LREs that the pairs produced. Furthermore, high-high pairs focused significantly more on grammar than lexis, and they attended to grammatical issues more frequently than the high-low and low-low pairs. High-high pairs attempted to resolve almost all of their LREs, while low-low pairs left a greater proportion (about 33%) of their LREs unresolved. One final finding was that in high-high and high-low pairs, correctly resolved LREs significantly outnumbered incorrectly resolved or unresolved LREs. It should be noted that all of the learners, regardless of proficiency level, correctly solved the majority of their LREs. This is an encouraging finding for collaborative writing.



Some parallels can be found between Leeser's (2004) results and those of Storch and Aldosari (2013). 30 L1 Arabic EFL learners in Saudi Arabia participated in this study. Learners in the class varied greatly in terms of language proficiency. The learners worked in dyads to write a short composition. Each dyad was categorized as high-high, high-low, or low-low. Data analysis showed that the high-high dyads had a greater tendency to focus on form in their LREs, while the low-low learners were more likely to focus on lexis. Furthermore, the high-high learners had the greatest degree of success in solving their LREs, followed by the high-low learners. Again, as in the case of Leeser (2004), it is encouraging that even though the low-low learners solved a smaller percentage of their LREs than the other two types of dyads, they still had a 67% success rate.

Studies that have addressed mixed-proficiency pairs include Kim and McDonough (2008); Kowal and Swain (1994); Leeser (2004); and Watanabe and Swain (2007). Results from these studies show that mixed-proficiency pairings can have effects on the number and type of LREs produced, the success of LRE resolutions, and patterns of interaction.

Some studies have shown that mixed-proficiency pairs produce more LREs than same-proficiency pairs, provided that one member of the mixed-proficiency pair is at a higher level than the other learners (e.g., a high-intermediate pair will produce more LREs than an intermediate-intermediate pair). This trend in LRE production among mixed groupings was observed in studies by Kim and McDonough (2008) and Watanabe and Swain (2007).

Participants in the study by Kim and McDonough (2008) were 24 learners of Korean studying the language at a Korean university. Learners were classified as intermediate or advanced. The 16 intermediate learners worked in pairs to perform a dictogloss task. Eight of the intermediate learners were then randomly chosen to repeat the task, but with a different text and an advanced partner. The participants in Watanabe and Swain's (2007) study were 12 ESL learners in Canada, classified as low, intermediate, or high. The intermediate learners were referred to as "core" participants (p. 124). Each core participant took part in the collaborative writing of two essays: one with a low-level learner and one with a high-level learner. A pre-test/posttest design was also used in this study to measure language learning.

In both studies, it was found that a pair with one higher-level learner was more likely to produce LREs. In Kim and McDonough's study, analysis of the learners' transcribed interaction indicated that advanced-intermediate pairs produced more LREs than intermediate-intermediate pairs. In the case of lexical LREs, the difference was significant. In Watanabe and Swain's study, core-high pairs in the study produced LREs more frequently than core-low pairs, and their LREs were longer.

Having a higher-level learner in a dyad can also affect the success with which learners solve their LREs. In Kim and McDonough's (2008) study, advanced-intermediate pairs correctly solved a significantly higher proportion of LREs than intermediate-intermediate pairs. Perhaps this is why six of the eight intermediate learners expressed a preference for working with a more advanced learner to working with a learner of the same level. In Leeser's (2004) study, the mixed-proficiency high-low pairs

had one trait in common with the high-high pairs: more often than not, they were able to correctly solve their LREs, and these correct resolutions significantly outnumbered incorrect or unresolved LREs. High-low pairs also solved a significantly greater number of LREs than low-low pairs.

Relative proficiency levels of individuals working together may also have an effect on how learners interact with each other. In Kowal and Swain's (1994) study, 19 Canadian grade 8 French immersion learners formed eight dyads and one triad to perform a dictogloss task. The pairs were labeled "homogeneous" or "heterogeneous" in terms of the two learners' proficiency levels (p. 85). The researchers observed that the stronger learners in heterogeneous pairs tended to dominate language-centered discussions, whereas learners in homogeneous pairs contributed more equally to such discussions. The researchers also found that learners in predominantly homogeneous pairs enjoyed more fruitful discussions, while "data from low-low groups [suggest] that some degree of heterogeneity might have been more beneficial for these students" (p. 87). In other words, perhaps learners in certain low-low pairings are unable to have productive discussions about language when performing collaborative writing tasks.

Kim and McDonough (2008) also observed a correlation between proficiency pairings and patterns of interaction. In their study, intermediate learners worked collaboratively with other intermediate learners and also with advanced learners. The intermediate learners who took on a dominant role when collaborating with a fellow intermediate student tended to be assertive enough to collaborate on an equal footing with more advanced partners. Conversely, learners who worked on an equal level with

students at the same level tended to take on a more passive or novice-like role when working with more advanced learners. Some learners expressed a dislike of working with more advanced learners as they did not feel confident enough to contribute.

A number of studies have examined the link between mixed proficiency levels and language learning gains as measured by pre- and posttests. Watanabe and Swain (2007) used pre- and posttests to measure what linguistic items students learned from a collaborative essay writing task. Unsurprisingly, intermediate-high pairs outperformed intermediate-low pairs on the posttest. Interestingly, the average of the intermediate learners' posttest scores was *higher* after working with a *less* proficient collaborator than after working with a *more* proficient collaborator. This suggests that taking on the role of an expert when collaborating may lead to more language learning than taking on the role of a novice. As Jacobs (2006) points out, in determining how to group students together for tasks, "the rehearsal and elaboration involved in teaching others may also aid their memory and deepen their understanding. Many teachers experience this, finding that high achievers understand the material much better once they have had the opportunity to teach it" (p. 33). Leeser (2004) notes that the higher-level learners in mixed-proficiency pairs did the vast majority of the work involved in solving the LREs that they had initiated. This seems to support Watanabe and Swain's finding, i.e., learners working with lower-proficiency partners cannot necessarily rely on those partners for support in resolving linguistic issues. Consequently, such learners must try to find the answers by consulting their own knowledge. This act may lead them to engage more deeply with the linguistic features under focus. If they are proficient enough, they may be able to arrive at

a solution on their own. Finally, they “teach” this to their lower-proficiency partner, and this teaching is likely to make the form more memorable to the learner who taught it.

### *Online*

There is little research that addresses how learners of different proficiency levels approach the same online collaborative writing tasks or how they work together in mixed-proficiency groupings. Two studies providing some insight into this topic include Kost (2011) and Lee and Wang (2013). In both studies, the relative language proficiency of the L2 learners proved to affect the roles these learners took on during the writing process.

In Kost’s (2011) study, eight fourth- and sixth-semester students of German worked in pairs to write essays. Although the effects of proficiency differences were not the prime focus of Kost’s study, she observed that a mixed-proficiency pairing led to the less proficient learner taking on the role of the writer and the more proficient learner adopting the role of “grammar checker” (p. 612). The two learners “accidentally” fell into these roles during their first assignment, and then purposefully stayed in these roles during their next assignment.

A similar phenomenon is observed in Lee and Wang’s (2013) study of 103 second-year university students in Taiwan working in groups to create picture books using a wiki. In this study, science majors from one university were grouped with English majors from another university. As the learners worked collaboratively, the more proficient English majors took on the role of editing their peers’ grammar. A number of

the English majors expressed dissatisfaction with this role, claiming that it did not help them improve their own English. The science majors, on the other hand, felt that receiving language help from their more proficient peers was beneficial to them in terms of language learning.

More research is required to determine the effects of mixed-proficiency pairings and groups in online collaborative writing. The limited amount of research to date suggests that care must be taken to ensure that learners contribute equally to the task or, if learners have different roles, to ensure that they understand the value of those roles, both for their finished writing projects and for their own language learning.

## **TASK TYPE AND INSTRUCTOR INVOLVEMENT**

A wide variety of writing tasks and genres are represented in research on collaborative writing. This section will summarize how these tasks have been carried out, demonstrating some major differences between face-to-face and online collaborative writing assignments.

### ***Face-to-face***

Task type also seems to have an effect on how learners attend to language. Storch (2013) distinguishes between language-focused tasks (such as dictoglosses) and meaning-focused tasks (such as jigsaws). Meaning-focused tasks also include writing assignments such as essays, responses to picture prompts, or data commentary tasks. Jigsaw and

dictogloss tasks have been used in several studies on collaborative writing and will be discussed presently.

A dictogloss task requires learners to listen to a passage and take notes. Then, working in pairs or small groups, the learners compare their notes and attempt to recreate the original text as faithfully and accurately as possible (Wajnryb, 1990, as cited in Storch, 2013, p. 3). Dictogloss tasks have been used in studies by Kim (2008), Kim and McDonough (2008), Kowal and Swain (1994), Kuiken and Vedder (2002), Lapkin et al. (2002), and Leaser (2004). However, the ways in which the tasks were used differ slightly.

The 34 Dutch high school students in Kuiken and Vedder's (2002) study each performed two dictogloss tasks. Learners in the control group worked individually while learners in the experimental group worked in groups of three or four. The dictogloss texts were intentionally written to include examples of the passive voice. The learners in the experimental group did not perform significantly better on posttests than learners in the control group. Furthermore, there was no significant difference between the frequency of use of the passive voice in the two groups' texts. However, analysis of the collaborative learners' transcribed interaction contains examples of both simple (i.e., shorter, more perfunctory) and elaborate (i.e., deeper, more engaged) noticing of the passive voice. Interestingly, one of the two dictogloss texts used led to more instances of noticing than the others. Even though the level of noticing varied across pairs, the fact that one text resulted in more noticing suggests that the linguistic content of the text (in addition to other factors, such as genre) is something that instructors should take into account.

In the case of Kowal and Swain (1994), learners were directed to recreate the text, but were also told that they did not have to produce exactly the same sentences as the original text, provided that they preserved the meaning of each sentence and strove for accuracy. Due to these instructions, one pair of learners decided to rewrite the text using their own words. In addition to receiving these instructions, learners were allowed to consult dictionaries or to ask the teacher for help, which they did. When they had questions for the instructor, she offered indirect feedback, i.e., providing hints rather than solutions. One final noteworthy feature of the dictogloss task in this study was that the instructor randomly chose some of the finished texts and used them as a basis for a class-wide discussion. Because it has been found that learners sometimes come to incorrect conclusions about the target language as a result of their LREs (Brooks & Swain, 2009; Kim & McDonough, 2008; Kowal & Swain, 1994; Leiser, 2004; Storch & Aldosari, 2013), a post-task whole-class discussion seems to be a good way to clear up any possible misconceptions that learners may have, ensuring that they do not “learn” incorrect forms from each other. Having access to dictionaries, being able to ask the instructor questions, and taking part in a class discussion of language features after the task has been done may be especially suitable adaptations for lower-proficiency learners.

Kim (2008) and Kim and McDonough (2008) similarly adapted the dictogloss activities in their studies. Whereas in previous studies the dictogloss text had been read aloud twice to learners, the instructors in these studies read the text three times. The researchers based their decision to implement the task in this way on the difficulty learners had experienced when performing a practice task.



In addition to dictogloss tasks, jigsaws have been used in a number of studies involving collaborative writing. Although jigsaws may vary (e.g., some use visual content while others use text), the tasks used in these studies have generally been consistent with each other, in that visual depictions of a story's events are used. One learner receives half of the pictures, while the other learner receives the other half. Without looking at each other's pictures, the two learners use language to describe their pictures to each other and decide on the order of events before writing out their stories.

Lapkin et al. (2002) used both jigsaw and dictogloss tasks in their study. Eight French immersion students worked in pairs to perform one task of each type. The researchers found some evidence of a task effect: the jigsaw task led to more varied vocabulary use than the dictogloss task. It seems that learners doing the dictogloss task were constrained by the lexical items they heard while listening to the text, while learners doing the jigsaw task felt no such constraint.

Swain and Lapkin (2001) performed a larger-scale study comparing these two task types. In their study, students from two grade 8 French immersion classes in Canada worked in pairs to write texts. In one class, they performed a jigsaw task, while in the other, they did a dictogloss. The researchers used pretests and tailor-made posttests to measure language learning. (Tailor-made posttests were created by adding items that had been discussed by learners in each class, determined from the transcripts of their interaction, to the pretests.) They did not find significant differences between the dictogloss and jigsaw classes with regard to the time required to complete the task, the quality of the final texts, or the posttest scores. In addition, although they had

hypothesized that the dictogloss would lead to a greater number of LREs, there was no significant difference between the two classes in the number of LREs produced.

This is not to say that there were no differences between how the learners fulfilled the two tasks. A closer analysis of the LREs produced in each class shows that the tasks directed learners' focus in different ways. The jigsaw provided visual images, leading learners to use adjectives such as colors. The dictogloss provided aural input, resulting in learners trying to decipher words that they had heard for the first time as a string of sounds. In addition, because learners received correct linguistic input, they reproduced more sophisticated forms in their texts than learners doing the jigsaw task. It is noteworthy that, although there were no significant differences in text quality, it was observed that learners in the dictogloss class were more accurate when using the target form (pronominal verbs) than learners in the jigsaw class. One further difference between jigsaws and dictoglosses can be seen in some of the standard deviation data in this study. Standard deviations for numbers of LREs and for time on task were much smaller for the dictogloss task. The researchers attribute this to the more open-ended nature of the jigsaw. The dictogloss contains a limited amount of input and a limited amount of lexis – whatever is provided in the text read by the instructor. After learners listen and take notes, there is only so much negotiation they can do before they settle on a final product. The jigsaw requires the learners to use whatever linguistic resources are at their disposal to adequately depict what they see in images. This, it seems, results in greater variation from pair to pair with regard to how much time they spend on task and how many LREs they produce.

Other studies that have made use of jigsaw tasks include Swain and Lapkin (1998), Swain and Lapkin (2002), and Tocalli-Beller and Swain (2005). All of these studies involved French immersion students in Canada. In these studies, joint text construction was followed by joint processing of feedback. Learners first worked in dyads to complete dictogloss tasks. They then received a reformulation of their text written by a native speaker of the language. The main focus of these studies was in exploring how learners jointly processed this feedback. It is important to note, however, that joint processing of feedback is a pedagogical tool that works much better when two or more learners have worked together to create one text. That is, if they have taken part in all of the stages of writing together, the feedback they receive will be meaningful to them both. Deciphering and discussing this feedback with each other will lead to more opportunities for noticing and language learning.

Jigsaw-like tasks were used by Fernández Dobao (2012) and Fernández Dobao and Blum (2013). What set these tasks apart from true jigsaws is that each learner could look at all of the pictures. There was no need for an information exchange; the learners simply had to decide on the correct order for the pictures before beginning to write.

In addition to jigsaw tasks, other types of meaning-focused tasks have been used for collaborative writing. Whereas a jigsaw task provides learners with the content they should write about (in the form of images), other, more open-ended tasks contain content that is not fixed, giving learners the opportunity to decide on both the content *and* the language. Informative texts (DiCamilla & Anton, 1997) and short descriptive and narrative texts (Shehadeh, 2011) have been used for beginning L2 instruction. Tasks used

for intermediate and advanced learners include stories in response to an open-ended picture prompt (Brooks & Swain, 2009), a data commentary task (Storch, 2005), short compositions (Storch, 2001; Storch, 2002; Storch & Aldosari, 2013), essays (Watanabe & Swain, 2007; Wigglesworth & Storch, 2009), and term papers (Gutiérrez, 2008; Yang, 2008).

In an instructional setting, the task choice should depend on the learning goal. The ability to write an essay is a skill that many learners need to pursue advanced opportunities in the L2, including higher education. For EFL learners, essay-writing can be helpful preparation for the TOEFL or IELTS tests. Indeed, these were the reasons given by Wigglesworth and Storch (2009) for choosing an argumentative essay task for their study. Such a task can encourage learners to consider the overall structure and communicative purpose of a text rather than only sentence-level issues. According to the researchers, the learners not only discussed local aspects of language, but also collaborated when coming up with ideas for the content of their essays.

Different tasks can encourage learners to attend to both content and linguistic accuracy in different ways. There is some evidence that in the absence of a form-focused mini-lesson preceding the writing activity, a dictogloss may give rise to more LREs than a jigsaw (Yilmaz, 2011). Other types of tasks may encourage an even greater focus on form. Storch (2001, 2002) compared three different types of tasks: compositions, editing tasks, and text reconstruction tasks. In her 2013 book, she reflects that the last two types of tasks are not true writing tasks because they do not require learners to compose a full text from start to finish: “Collaborative writing...excludes editing tasks where the

learners are asked to amend a text that they did not compose, or a text-reconstruction task where learners have to reconstruct a text based on given content words” (pp. 2-3). In her 2001 study, she found that editing and text reconstruction tasks (i.e., not true collaborative writing tasks) led to a larger number of LREs and a higher rate of correctly solved LREs than the composition (i.e., true collaborative writing) tasks. Therefore, if the main goal is a focus on form, it is possible that highly grammar-focused collaborative tasks such as editing (Storch, 2001; 2002) or text reconstruction (Storch, 2001; 2002; 2008) would be preferable to collaborative writing tasks. However, if the goal is for learners to construct sentences on their own, to use language to communicate meaning, or to learn to write in the L2, collaborative writing tasks are a sound option that also encourage some focus on form. In addition, certain instructional practices can be used in tandem with collaborative writing tasks to encourage a greater focus on form. One example is teaching learners a grammar lesson prior to the writing task (Fernández Dobao, 2012; Lapkin et al., 2002; Swain & Lapkin, 1998).

### ***Online***

The vast majority of face-to-face collaborative writing tasks have been in done in single sittings under timed conditions in classrooms or language labs. Studies using synchronous computer-mediated communications (SCMC), such as voice and text chats, have been undertaken in similar circumstances and with similar tasks. Learners in Yilmaz’s (2013) study performed two tasks that are generally used in face-to-face

environments: a dictogloss and a jigsaw. Tan et al. (2010) had their participants do composition, editing, and translation tasks.

Unlike face-to-face and SCMC tasks, asynchronous computer-mediated tasks extend over a longer period of time, with most taking two weeks or longer. A wide array of tasks and text types have been used in asynchronous online settings: short, fictional stories (Castañeda & Cho, 2012; Ducate et al., 2011; Lee, 2010); a micropedia (Ducate et al., 2011); essays (Elola & Oskoz, 2010; Kost, 2011); research projects for aspiring graduate students (Kessler et al., 2012); picture books (Lee & Wang, 2013); cultural reports, travel plans, and letters (Lee, 2010); school brochures (Mak & Coniam, 2008); translations (Miyazoe & Anderson, 2010); and biographies and posters (Woo et al., 2013). Some more open-ended tasks elude an easy description. In studies by Kessler (2009) and Lund (2008), for example, learners were asked to construct a wiki on a pre-selected topic.

Some of the tasks mentioned above have been integrated into instruction, complementing the language or content that has been covered in the classroom. The writing assignments in Bradley et al.'s (2010) study, for example, were linked to course modules. In Arnold et al.'s (2012) study, intermediate German students were assigned wiki tasks that required them to do research on background historical and cultural information related to a novel they were reading for class. In one class, the task was done after the learners had read the novel, and they did presentations on their wikis in class. In the other two classes, learners wrote their wikis before reading the novel. Each group in these two classes had a different topic to research and to write about on their wiki. Upon

completion, they did a webquest that required them to read each other's wikis and thus learn more about the relevant background information for the novel.

In Kessler's (2009), the EFL learners in a B.A. program in Mexico were instructed to create a wiki where they would define the term "culture," which was the main focus of the content-based online course they were taking, entitled "Cultures of the English Speaking World" (p. 81). They were expected to reflect on what they were learning in the class and incorporate their ideas into the wiki.

In addition to integrating cultural topics into wiki instruction, some studies have looked at how grammar instruction can be supplemented through wiki use. Castañeda (2011) and Castañeda and Cho (2012) used writing assignments that were meant to enhance learners' understanding and productive knowledge of the Spanish preterite and imperfect. In addition, these writing assignments also incorporated the use of videos. Prior to writing, learners watched videos that were intended to draw their attention to the distinction between background and foreground actions, thus helping them to understand when the preterite and imperfect aspects should be used.

Lee (2010) used tasks that were designed to target specific linguistic features. She used four different types of wiki tasks over the course of one semester, each one on a topic that was linked to the course content. Lee found that task type had an effect on learners' attention to language. In one task, learners had to write a "Dear Abby" type of letter, which led them to use the wiki discussion page to decide whether to use the informal or formal term for "you" – more of a pragmatic issue than a grammatical one. A

different task gave rise to a more grammar-oriented discussion, where learners discussed whether to use the indicative or subjunctive form of a verb.

Kost (2011) gave her intermediate German students the choice to do regular classroom writing assignments either individually or with a partner, using a wiki. Kost's study is also a good starting point for a discussion of the structure of wiki tasks themselves and the level of teacher involvement throughout the writing task. In Kost's case, the instructor only received the learners' final paper essays. The instructor did not look at the wikis or offer feedback at intermediate stages during the writing, presumably because some learners were writing on wikis while others were not and the instructor's aim was to evaluate only the finished products.

Wiki tasks in other studies have been similarly characterized by a lack of instructor feedback. These tasks usually involved some general, non-specific directions from the instructor and no deadlines for the completion of subtasks. The Swedish ESP learners in Bradley et al.'s (2010) study were assigned wiki tasks related to their course modules. Due to the researcher's wish to see how the learners would approach the task without any outside influences, the participants received very minimal instructions and no intervention from the instructor or researchers.

A similar approach was taken by Kessler (2009) in his study of 40 pre-service English teachers in Mexico. Kessler and Bikowski (2010) continued to investigate the wiki created by these learners. The learners were told to write about "culture," but were given no further directions. As a result, perhaps, of this lack of direction, it was observed that the learners used the wiki in a way that had not been foreseen by the researcher:



toward the end of the project, they treated the wiki as an informal message board, writing messages to the instructor “which seemed more like email messages...While this type of use was not anticipated, it seemed to provide closure for the students” (p. 51). If a large group of learners are given a high degree of freedom to write as they like, they may turn the collaborative writing task into something that is markedly different from what the researcher or instructor had in mind when assigning the task. In this particular case, the use of the wiki as a message board was not collaborative in nature.

Like Kessler (2009), the instructor in Lund’s (2008) study also kept directions to a minimum. The participants in the study were 31 high-school age EFL learners in Norway. In this study, learners were instructed to first work together in class in dyads and then later to link their work together using a wiki. In the researcher’s view, the learners moved successfully from local collaboration (in class, with a partner) to “networked” collaboration using the wiki. The assignment topic was “‘Our’ U.S.A.” Interestingly, the researcher notes that the topic was “developed by the teacher and learners together” (p. 44). This type of approach may be effective for motivating learners.

Two studies have involved multiple wiki projects, each with a different level of instructor involvement: Arnold et al. (2012) and Ducate et al. (2011). Three German classes took part in the study by Arnold et al. All of the classes did wiki tasks that were meant to help them understand a novel they were reading. In one class, the learners worked for three weeks to create their wikis and then presented them in class. Feedback on their wikis was reserved until after they had done their presentations. The other two classes were assigned a six-week assignment that included many distinct sub-

assignments, including an annotated bibliography, an outline, and several drafts of the text. The learners received feedback from their instructor and/or peers after completing these stages. In summary, class 1 had a relatively unstructured assignment with summative feedback while classes 2 and 3 had a highly structured and more work-intensive assignment that incorporated formative feedback throughout. Interestingly, members of Class 1 were more likely to edit their peers' work while members in the other two classes saved most of their formal edits for their own (rather than their peers') work.

Data from the learners in Classes 2 and 3 were used in Ducate et al.'s (2011) work. This study also included data from intermediate French and Spanish classes. Learners in the Spanish class were instructed to write a branching story (i.e. a fictional text where the reader is given choices at various points in the story that direct them to different outcomes). After completing their stories, the learners presented them in class. As was the case with Class 1 in Arnold et al.'s (2012) study, there was no interference from the instructor during the writing of the wikis. Learners in the French class were assigned themes and language points that came up in a French novel they were reading and instructed to create a micropedia, which is "a small student-generated version of an encyclopedia" (p. 502). Unlike the learners in the Spanish class, the French students received linguistic feedback from a native French speaker upon completion of each section. In addition, they received feedback from their peers on the layout of their wikis.

The French learners in Ducate et al.'s (2011) study and the German learners in Classes 2 and 3 of Arnold et al.'s (2012) study took part in relatively structured tasks within the context of writing a wiki. The students had to perform various subtasks in

order to complete the larger assignment. Other studies have involved slightly less structured wiki assignments. In these studies, learners were expected to write a first draft and then revise it after receiving feedback from the instructor, thereby creating their final draft. Studies that have taken this approach include Castañeda (2010) and Elola and Oskoz (2010). In both studies, learners had between two and three weeks to complete the full assignment.

A number of studies have included many stages in the wiki tasks. These include Castañeda and Cho (2012), Chao and Lo (2011), and Lee (2010). Castañeda and Cho's study involved the following steps: face-to-face discussion in class, wiki writing, face-to-face discussion of the instructor's feedback and of how to revise the text, and finally peer-peer revision and editing on the wiki.

Chao and Lo's (2011) five-week wiki project included a specific step for each week. 51 English composition students in Taiwan worked in groups of four or five to complete a task. The task was to write a fictional story. In the first week, learners worked together to plan their stories. Next, they individually wrote scenes for the story. In the third and fourth weeks, they revised each other's scenes for content and edited them for language. In the fifth and final week, they combined their individually-written scenes into one coherent story. Unlike true collaborative writing assignments, this one required learners to complete the task by individually revising and editing the finished collaborative product to make it their own. They then published these individually. Because of this last step, and because an earlier step required them to write their scenes individually, this task would not fit Storch's (2013) description of a collaborative task. It

is mentioned here, however, as it does include certain important elements of collaborative writing and demonstrates how an online wiki task could be used to encourage learners to scaffold each other but also to help them develop their individual writing skills.

In Lee's (2010) study, each wiki assignment comprised four distinct stages: drafting, revising, editing, and publishing. In addition to segmenting the task, Lee also provided detailed instructions about using the wiki, providing guidance on how to leave comments and questions for each other using the wiki's discussion page or the text itself and even going so far as to specify the number of sentences students should add and edit.

Similarly to Lee (2010), Woo et al. (2013) provided concrete guidance to the primary school EFL students in their study. The guidance in this case took the form of rules that learners had to read and agree to. These rules dealt more with privacy issues (such as protecting their passwords and refraining from writing out personal information such as names and addresses on the wiki) than with how to write or revise their work.

In addition to instructors' and researchers' decisions regarding the provision of guidelines and the requirement to write multiple drafts or complete several subtasks, a few other commonalities can be observed across multiple wiki tasks. One concerns a period of training for the wiki or a chance for learners to become accustomed to the tool. The Hong Kong primary schools students in Mak and Coniam's (2008) study went through a week-long preparation stage before beginning to write their wikis. The advanced Spanish learners in Elola and Oskoz's (2010) study worked in pairs to complete a training session using both chats and wikis. In Lee and Wang's (2013) study, learners had a whole semester to prepare for the wiki task. In this study, 103 university English

students in Taiwan worked in groups of four to six to create picture books. In the semester prior to the wiki project, the learners had a chance to get to know each other (as groups included students from two universities) and to get comfortable participating in peer editing activities.

Another feature shared by two studies is the specification of a target audience for the wiki. In the case of Mak and Coniam's (2008) Hong Kong primary school students, the audience was the learners' parents. The learners' assignment was to create a brochure about their school. This was eventually published and distributed to the learners' families. Learners in two of the German classes in Arnold et al.'s (2012) study worked in small groups to write about one cultural or historical topic. The entire series of wikis together presented a wide array of topics which learners were meant to consult as part of a webquest. In this case, learners were writing for each other, for an authentic purpose: to collectively provide each other with the background knowledge needed to read and appreciate a German novel.

The opportunities to take part in a large project with a large potential audience and to have a substantial period of time to write and improve on a piece of writing are some of the advantages that wiki tasks have over traditional, face-to-face collaborative writing assignments done in the classroom. Asynchronous online tasks allow learners more time to reflect on language and content, to engage with each other's contributions, and to revise and edit their piece as a whole. Face-to-face tasks offer a different set of advantages: they encourage interaction and LREs while also offering learners the

opportunity to use the L2 to perform several different authentic functions, such as agreeing and disagreeing. Online and face-to-face environments lend themselves to the implementation of different types of tasks, and these can, in turn, have an effect on the outcomes of collaboration.

### **III. OUTCOMES OF L2 COLLABORATIVE WRITING**

This chapter will examine the outcomes of collaborative writing tasks used in L2 classrooms. These outcomes encompass patterns of learner interaction, peer-peer scaffolding, the writing process, language learning, and text quality.

#### **PATTERNS OF INTERACTION**

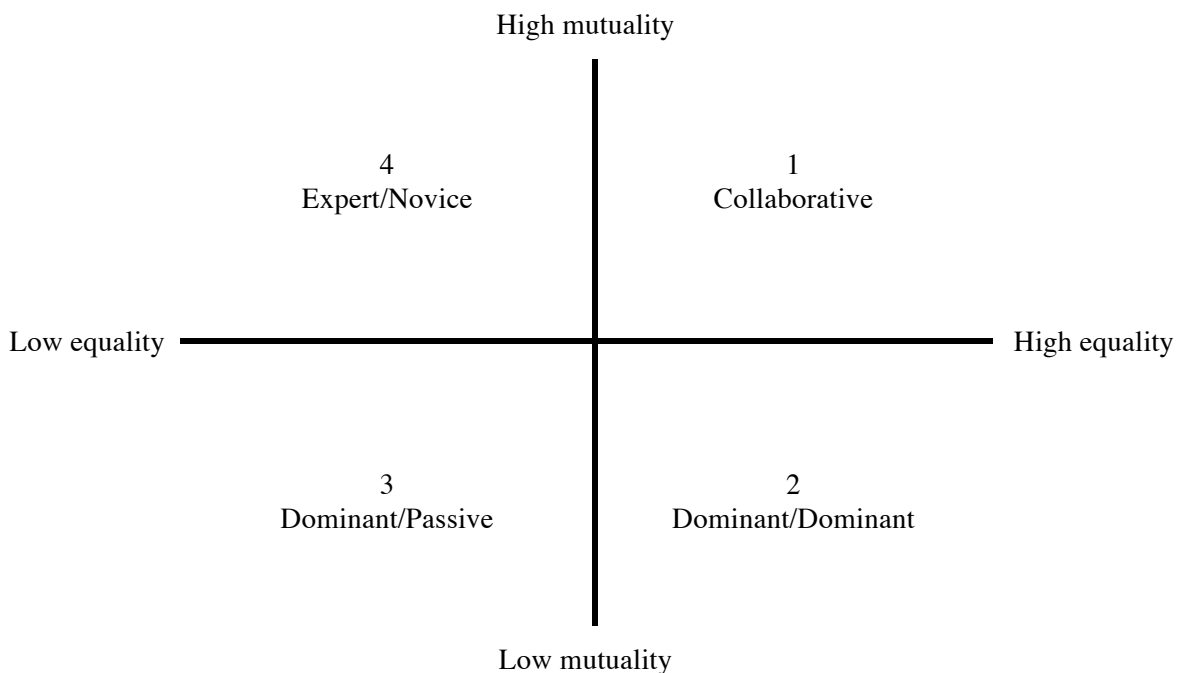
The chance for learners to collaborate, along with a host of other factors such as personality, self-confidence, language proficiency, and perceptions of their classmates, may give rise to different patterns of interaction. As this section will show, some of these patterns are more conducive to language learning and successful text construction than others.

##### ***Face-to-face***

Storch has done seminal work on the different patterns of interaction that arise when learners work together to complete a written task. In her 2002 longitudinal study of Australian ESL learners working on three types of written tasks, she identified four patterns of dyadic interaction: collaborative, dominant/dominant, dominant/passive, and expert-novice. What differentiates these patterns is how they rate on scales of equality and mutuality. Equality is defined as “an equal degree of control over the direction of a task,” while mutuality describes “the level of engagement with each other’s contribution” (p. 127). Collaborative pairs have high degrees of both equality and mutuality,

dominant/dominant pairs are characterized by high equality but low mutuality, expert/novice pairs exhibit high mutuality but low equality, and dominant/passive pairs lack both equality and mutuality. Other studies have used Storch's typology to investigate how patterns of interaction are affected by proficiency (Kim & McDonough, 2008), to determine how patterns of interaction may influence the amount of the L2 used in interaction (Storch & Aldosari, 2013) and the number of LREs produced (Storch & Aldosari, 2013; Watanabe & Swain, 2007), and to look for a relationship between patterns of interaction and language learning (Watanabe & Swain, 2007). Research on patterns of interaction have shown that these patterns can have an impact on the production of LREs and on language learning.

*Figure 1.* A model of dyadic interaction. (Adapted from Storch, 2002, p. 128).





Storch's 2002 study is an important piece of research in this area. There were ten intermediate-level ESL learners in this study. These learners completed a total of three versions (two in dyads and one individually) of three tasks: a composition, an editing task, and a text reconstruction task. (It should be noted that only the first task falls into the category of writing while the other two are strictly grammar tasks. See Storch, 2013, for more on this distinction.) By analyzing their interaction, Storch identified the four previously-mentioned patterns of interaction and also observed that these patterns did not appear to change much over time or from one task to the next. The researcher also analyzed links between learners' interaction and language learning by examining whether language items they discussed in one task appeared in students' later, individual tasks: she "identified opportunities for learning that members of a group constructed through their interaction and then examined evidence for the take-up of these opportunities by learners in a subsequent task" (p. 137). The analysis shows that collaborative and expert/novice patterns led to more instances of uptake than the two other patterns. Learners working in dominant/dominant pairs did not engage enough with each other's contributions to learn from each other, and dominant/passive pairs tended to miss learning opportunities, whereby neglecting to discuss a problematic language item when working in pairs led to students failing to learn from the opportunity and making a similar error when doing an individual task. Given that collaborative pairs exhibited the most beneficial interaction, it bodes well that Storch found this pattern to be predominant in her data.

Almost half of the pairs (three out of eight) in Watanabe and Swain's (2007) study and more than half of the pairs in Storch and Aldosari's (2013) study took a collaborative approach to writing. Researchers in both studies found further evidence that a collaborative pattern of interaction can lead to greater language learning opportunities. In both studies, members of collaborative pairs produced more LREs than members of other types of pairs. Furthermore, in Watanabe and Swain's study, a collaborative pattern of interaction led to the highest posttest scores. These findings support Storch's (2002) observations that learners in collaborative pairs reap the greatest benefits from collaborative writing.

Both the studies by Watanabe and Swain (2007) and by Storch and Aldosari (2013) looked at learners of different proficiency levels working in same- or mixed-proficiency pairs. The collaborative learners in Watanabe and Swain's study performed better on posttests regardless of the proficiency levels of their partners. In other words, mixed-proficiency pairings can lead to language learning for *both* learners when they adopt a collaborative outlook. Storch and Aldosari discovered that high-low pairs produced more LREs than low-low pairs, but *only* when the pattern of interaction was collaborative or expert/novice; dominant/passive high-low pairs produced fewer LREs than collaborative low-low pairs. Kim and McDonough (2008) similarly concluded that high-low pairs were more beneficial for the learners involved than low-low pairs provided that the more advanced learner adopted a collaborative or expert (but not dominant) stance. This provides some evidence that the pattern of interaction adopted by the pair has a greater impact on the quality of their interaction than their L2 proficiency.

Patterns of interaction also seem to affect how much learners speak in the L2 while interacting. In Storch and Aldosari's (2013) study, low-level learners exhibited longer turns in their interaction when working in collaborative relationships, either with other low-level learners or with higher-level learners. More advanced learners, on the other hand, spoke more during their turns when playing an expert or dominant role. Watanabe and Swain (2007) found that learners in collaborative or expert/novice pairings demonstrated more turns per LRE than learners in other pairings.

What is clear from these studies is that the ideal pattern of interaction is a collaborative one, where learners have an equal amount of say in the undertaking of the task and where they carefully consider each other's suggestions. Both Watanabe and Swain (2007) and Aldosari and Storch (2013) conclude that patterns of interaction may be more influential on learners' collaborative experiences than proficiency levels. In online collaborative writing, patterns of interaction have also been found to affect how learners engage with their tasks.

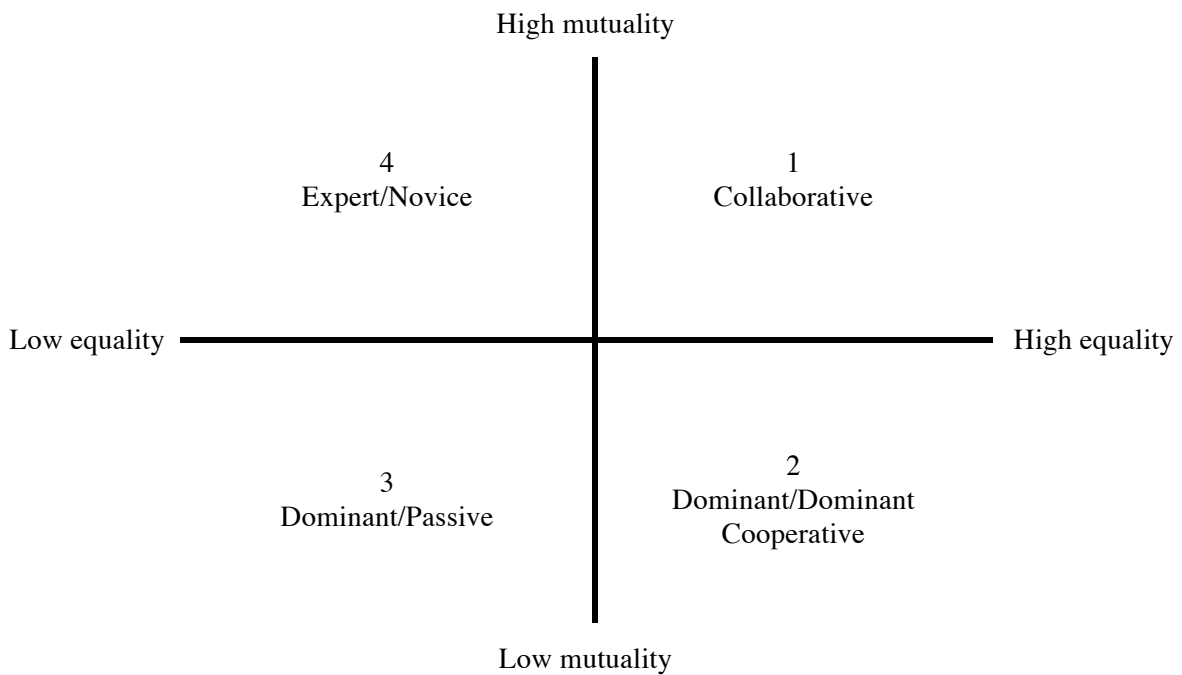
### ***Online***

Studies that have investigated patterns of interaction in online collaborative writing include those by Tan et al. (2010), Arnold et al. (2012), and Bradley et al. (2010). The latter two studies were conducted using wiki-based writing tasks and will be addressed later in this section.

Tan et al. (2010) compared the patterns of interaction exhibited by dyads when they worked in face-to-face and synchronous computer-mediated communication

(SCMC) environments. Each pair performed two isomorphic versions of seven tasks: one face-to-face and one online. The mode of communication seemed to have an effect on learners' patterns of interaction. For example, one pair that was predominantly dominant/passive when working face-to-face was more collaborative when working online. Interestingly, while the number of collaborative patterns was almost equal in the two modes of communication, there were more instances of dominant/passive and expert/novice interactions in face-to-face communication than in SCMC. In contrast, the SCMC environment gave rise to a pattern of interaction that was not seen in face-to-face interaction: *cooperation*. The researchers situated this pattern within Storch's (2002) taxonomy by describing it as high in equality but low in mutuality; thus, it shares these characteristics with the dominant/dominant pattern. Unlike in the dominant/dominant pattern, however, neither member of the cooperative dyad tries to assert control over the task. Instead, the cooperative pattern is marked by "a division of labour, where both participants work on the tasks but do not engage with each other's contribution. The completed task is therefore a composition made up of individually composed sentences" (Tan et al., 2010, p. 27.7). Furthermore, learners working cooperatively exhibited "few questions and little discussion and deliberation over the sentences they constructed. Nor was there talk about the language they used" (p. 27.16).

Figure 2. Model of dyadic interaction (adapted from Tan et al., 2010, p. 27.7).



In Tan et al.'s study, the distinction made between collaboration and cooperation stems from whether learners work jointly to formulate sentences and whether they discuss their language choices with each other. A distinction between collaboration and cooperation is also made in studies on wiki-based collaborative writing. These studies do not rely on Tan et al.'s (2010) modified version of Storch's (2002) taxonomy, which features five different patterns of interaction (collaborative, expert/novice, dominant/dominant, dominant/passive, and cooperative). Instead, they categorize learners' interaction as being either collaborative or cooperative. Dillenbourg (1999) defines *cooperation* as occurring when "partners split the work, solve sub-tasks individually and then assemble the partial results into the final output," while

Dillenbourg, Baker, Blaye, & O'Malley (1995) characterize *collaboration* by referring to a “mutual engagement of participants in a coordinated effort to solve the problem together” (as cited in Lee & Wang, 2013). In theory, “collaboration” and “cooperation” should be constant regardless of the learning context (face-to-face or online). In practice, however, there is a small distinction. For Tan et al., learners must jointly construct the text *at the sentence level* to be categorized as collaborative. Learners cannot co-construct at the sentence level while working on wikis due to the asynchronous nature of the tool; for logistical reasons, they write their sentences individually. Yet, learners can still act collaboratively in a wiki context. Once their sentences are written and joined to form a text, the learners can read each other's parts and revise, comment on, or provide feedback on these parts. Engaging with each other's contributions in this way is seen as collaborative and allows the learners to write a coherent, unified text. If learners write their own sentences and edit their own sentences without interacting with what their peers have written, they are acting cooperatively and not collaboratively.

A small number of studies on wiki-based collaborative writing have defined learner interaction as either collaborative or cooperative (Arnold et al., 2012; Bradley et al., 2010; Kost, 2011; Lee & Wang, 2013). Of these studies, the first two specifically include research questions that deal with the distinction between collaboration and cooperation, as outlined above.

Arnold et al. (2012) found that learners were more likely to take a collaborative approach to revision when attending to content. 72% of their content-related changes occurred in their own writing, while 28% addressed that of their peers. In contrast, the

percentages of self- and peer-directed formal (linguistic) edits were more balanced, demonstrating that learners were more likely to revise their peers' grammar, word choice, or spelling than their ideas. The authors propose a couple of possible reasons for these phenomena. One is that learners may have wanted to avoid making content-based revisions of a peer's work to avoid damaging the original author's "psychological ownership of [the] text" (p. 440). If this is true, then learners may have difficulty switching from a paradigm where writing is treated as an individual activity to one where multiple authors can claim joint ownership of a text.

Bradley et al (2010) designed tasks for L2 learners that were relatively open-ended: learners were given a topic, a word limit, and were instructed to "take turns in writing" (p. 253). Of the 25 groups that participated in the study, five were found to be neither cooperative nor collaborative. An examination of the wiki showed that the entire text had been produced in one edit, presumably by one author. Five other groups were found to be predominantly cooperative. Learners in these groups read each other's contributions and added their own text, but did not revise, edit, or comment on what their peers had written. In some cases, they divided their work clearly among the group members (division of labor being another characteristic of cooperation). While these groups were mostly cooperative in nature, some of them also exhibited some collaborative traits, demonstrating that there is a spectrum of activity that can fall between the extremes of collaboration and cooperation.

The remaining ten groups in the study were classified as collaborative, and they went through more versions of texts, each incorporating new revisions, than the other

groups. These learners used their expertise to address the text as a whole rather than focusing primarily on their individual contributions. They attended to textual issues at both local and global levels, addressing both content and form. Learners in one group also dealt with issues of register, working to make the tone of their writing more appropriate for a formal, academic context.

In this study, collaborative groups accounted for 15 of the 25 groups. Thus, collaborative groups outnumbered the non- (or less) collaborative groups. Kost (2011) similarly found collaboration to be slightly more prevalent than cooperation in her study of L2 learners of German. Again, as with the studies on face-to-face collaborative writing, it is encouraging to see that learners have a good chance of developing a collaborative pattern of interaction. Given that revisions arguably lead to better writing, true collaboration among learners is likely the ideal type of interaction in online collaborative writing as it is in face-to-face collaborative writing. As Arnold et al. (2012) suggest, however, further research should strive to determine the effects of collaboration and cooperation on the quality of a finished text. If collaboration does indeed lead to significantly better writing, perhaps instructors would do well to find ways to encourage it.

## **SCAFFOLDING THROUGH PEER-PEER INTERACTION**

The previous section demonstrated that the collaborative pattern of interaction leads to more fruitful verbal dialogue in face-to-face collaborative writing and more



revision and refining of the text in online collaborative writing. This section will take a closer look at examples of collective scaffolding in collaborative writing tasks.

### ***Face-to-face***

A key characteristic of face-to-face collaborative writing is the back-and-forth exchange between participants as they formulate their text. This interaction can help learners collectively scaffold each other. One way for learners to scaffold each other is through repetition. DiCamilla and Anton (1997) investigated the role of repetition within the interaction of beginning-level adult L2 learners of Spanish working in pairs to write informative texts. Repetition was operationalized as “any restatement of the content or form of the task, in either Spanish or English, which had been mentioned previously in the discourse by either member of the dyad” (p. 617). The authors found that repetition helped regulate learners’ approach to the task in certain ways. Repeating their own contributions or those of their partners allowed the learners to evaluate these utterances, and, and, in certain cases, alter them, before committing them to paper. Repetition acted “like a space on a scaffold from which one may work” and “enable[d] the students to cling to what they [had] thus far constructed, in order to maintain their focus of attention, to evaluate, and from that point possibly construct new forms” (p. 617). In addition, repetition served the function of helping learners reach a state of *intersubjectivity*. In other words, by repeating each other’s words, the learners spoke with the voice of a single entity, a single author.

Repetition is not, of course, the only way for learners to engage with each other's ideas. Gutiérrez (2008) investigated the types of metalinguistic activity evident in learner-learner interaction. In the study, advanced learners of English in Canada, whose L1 was French, worked in groups of three or four to produce short term papers. He found that learners engaged in various types of implicit and explicit metalinguistic activity. These included speech actions, where learners accepted, rejected, questioned, or repeated what their peers said; and verbal reformulations, where learners altered what was just proposed by a peer, stating it in a slightly different way. While verbal reformulations were very frequent, the greatest percentage of metalinguistic activity was taken up by explicit comments or questions. This was done in the L1, but also in the L2, e.g. "Is it singular or plural?" (p. 526).

As learners work together to compose a text, they engage in verbal interaction to formulate their ideas and translate them into the appropriate words on the page. While much of this discussion can focus on content, it has been repeatedly shown that learners engage in what Swain (2006) calls *linguaging*. Linguaging can be quantified and further investigated by using the language-related episode (LRE) as a unit of analysis. An LRE occurs when learners focus specifically on a formal feature of language (e.g., verb tense). Learners identify a linguistic problem and then sometimes (but not always) make an attempt to resolve it. Researchers studying face-to-face collaborative writing have analyzed transcripts of recordings of learners' verbal interaction in order to find instances of LREs.

LREs are generally categorized by focus (e.g., grammar, lexis, mechanics) and resolution (i.e., correctly solved, incorrectly resolved, unresolved). A grammar-focused LRE may be about verb tense, subject-verb agreement, the use of articles, or other aspects of syntax or morphology. When learners work together, they can pool their linguistic resources. As a result, one learner may provide a partial solution to a problem while another learner provides the rest of the solution. An example of this can be seen in Brooks and Swain's (2009) study of adult ESL learners in Canada. Two learners worked together to form the superlative form of the adjective, "rich." One provided the correct ending ("-est") while the other provided the definite article (p. 147).

The other main category of LREs is lexical LREs, which mainly involve learners in trying to find an appropriate word or in discussing the meaning of a particular word. An example of this can be seen in Swain and Lapkin (1998), where L1 English learners worked in pairs to perform a jigsaw task in French. One student did not know how to say the word "*pillow*" in French and asked his partner for assistance:

Rick: Et elle est encore au...au...uh ...a l'autre bout du lit avec, avec ses pieds sur le...sur la...how do you say "pillow"? (And she is already at the other end of the bed with, with her feet on the. ..on the ...how do you say "pillow"?)

Kim: Oreiller. (Pillow.)

Rick: Avec ses pieds sur l'oreiller. (With her feet on the pillow.) (p. 332)

Learners collaborating in face-to-face environments to write a text interact through repetition and metalinguistic activity, including LREs. This interaction regulates

their thought processes as they collectively decide on what to add to their texts. The interaction between learners in online environments generally takes on a different form.

### *Online*

In online environments, too, learners writing a text together have to make decisions regarding language, and the medium appears to play a key role in shaping this interaction. In some studies, learners used synchronous computer-mediated communication (SCMC) for some (Elola & Oskoz, 2010) or all (Tan et al., 2010; Yilmaz, 2011) of their interaction. The interaction in these studies is similar to face-to-face interaction in that it happens in real time (although there may be a time lag between questions and responses). A few examples of LREs from these studies provide a clearer picture of the nature of learner-learner communication in SCMC environments.

In Yilmaz's (2011) study, L1 Turkish learners of English worked in pairs to complete jigsaw and dictogloss activities. The learners used MSN Messenger (a text chat program) to interact with each other for the first ten minutes of the activities before moving to CoWord ("a cooperative multiuser text editing tool," p. 120) to write out their stories. Data in the study came from the chats. In the dictogloss activity, learners used the chat program to compare their notes with each other. In the jigsaw activity, they used the chat program to figure out the correct sequence of events of the jigsaw story. In both types of tasks, the learners were typing and not talking; therefore, they could write out sentences or sentence fragments and verify them with each other. As they asked each other for verification, discrepancies between their notes or understanding led to LREs.

These were categorized as lexical, grammatical, or orthographic. The following is an example of a grammatical LRE characterized by metatalk:

A: shall we change some parts?

B: if you want to

B: look at the grammar

B: there is a tense difference

A: yes I realized it

A: we should use simple

A: present like in Turkish, right? (p. 122)

An example of a lexical LRE in SCMC can be seen in Tan et al. (2010), where one learner requests the assistance of his partner in verifying the meanings of the Chinese words for “menu” and “think” (p. 27.15). In both examples, the real-time, dialogic nature of the interaction resembled face-to-face interaction.

In the two previous studies, learners worked in a narrow time frame (they completed the texts in one sitting) and were obliged to use SCMC. In Elola and Oskoz’s (2010) study, learners had 15 days to do a writing assignment using a wiki, and their only requirement regarding SCMC was that they engage in it at least once during that period. Learners in this study generally used text or voice chats to discuss content and organization rather than to focus on linguistic issues. Two learners in Kost’s (2011) study made the decision on their own to use MSN Messenger to discuss their task and ultimately used this chat program to plan out the structure of their essay. It may be concluded that when learners are forced to use SCMC as their only mode of interaction,

they will use it in a way that is akin to learners speaking to each other face-to-face: they will bring up or ask each other for assistance on formal linguistic issues. However, if asynchronous computer-mediated communication (ACMC; wikis are an example of this) is added as a component of the assignment, learners may use text and voice chats to decide on larger issues of content and structure, saving formal issues for later revision within the wiki pages.

Kessler et al. (2012) investigated how 38 English L2 Fulbright scholars used Google Docs to collaboratively write research papers. The learners worked in groups of three or four. One characteristic of Google Docs that sets it apart from ACMC tools such as wikis is that learners can see what their peers are writing as they write, in real time. Therefore, depending on when learners use the tool, a Google Doc can facilitate SCMC (if all writers are writing or editing at once) or ACMC (if writers take turns to write). Kessler and his colleagues reported finding at least once instance of a group of learners (out of three groups chosen for case study analysis) using the Google Doc synchronously to simultaneously engage in the editing of a particular sentence. In one example, learners changed the text, “The reasons that affect change in behavior after becoming a parent?” to “What are the reasons that affect change in behavior after becoming a parent?” within 14 iterations in the span of two minutes (p. 100). Although the researchers do not make this claim, it can be argued that the learners were communicating with each other even though they were not engaging in explicit speech acts such as requests for assistance. Each edit can be seen as an implicit suggestion (“How about this? Is this all right?”). Whereas a text chat is a place for discussion and allows learners to enlist each other’s

assistance with regard to content and form, a Google Doc is the place for the text itself, where learners can reflect on what has already been written and make changes to it as they see fit. Learners looking at the Google Doc may therefore feel less inclined to engage in metalinguistic talk to discuss form and, instead, to just offer different versions of a sentence until they collectively deem one to be satisfactory.

Text and voice chats are, by nature, synchronous. Google Docs can be used synchronously. Wikis, however, are always used asynchronously. When writing on a wiki, a learner can only see the version of the text she is currently working on. This lack of synchronicity affects the nature of interaction between learners.

One important feature of wikis is the discussion page. Separate from the text itself, this is a page that can be used to plan or discuss different aspects of the text. Kost (2011) mentions that intermediate L2 learners of German in her study used the discussion and conversation pages to discuss both content and grammatical issues. The beginning L2 learners of Spanish in Lee's (2010) study used their discussion page to discuss issues relating to both content and form while working together to produce a piece of writing in Spanish. In one excerpt from a discussion page, a learner requests assistance from peers regarding two sentences that he or she had written. The peers offer suggestions and also bring up separate issues related to preposition choice and noun-adjective agreement. The discussion ends with the first learner volunteering to incorporate the suggested changes:

1. jervinis31: Okay so I'm all done. I have two sentences that I am having trouble with. One is "Yo espero mi problema puede ser ayadado" (I hope that my problem can be helped) The other is "La sola chica

que puedo hablar con es mi madre” (The only girl that I can talk to is my mom) I don’t even know if they make sense or if you guys know if there is a different or easier way to say it.

2. jwe6: We might just want to simplify the first sentence to... I hope that you can help me with my problem (Espero que pueda ayudarme con mi problema).

3. aed22: I think we need to put ‘con’ before ‘quien’ but I’m not sure.

4. jwe6: We also need to fix a few more small things like mi bolsa ‘lujoso’ to ‘lujosa’ in paragraph 1 and add ‘me’ for ‘desperté’ in paragraph 2.

5. jervinis31: I’ll make changes. Now we need to add pictures. (p. 270)

The discourse generated by the students on the discussion page reads like a dialogue, with learners engaging in different speech acts (in the L1). Although asynchronous, it is analogous to the verbal exchanges that learners participate in when writing a text together in a face-to-face environment. This type of dialogic exchange does not generally take place within the text pages of the wiki, where learners are more likely to make changes rather than suggest them.

In several studies investigating wiki-based collaborative writing, learner behavior has been observed by looking at revisions in the archived pages of the wiki (all of the iterations of the text throughout the various stages of writing and revising) . Kessler (2009), for example, focused specifically on those parts of the wiki text that had been selected by learners for editing. This type of revising behavior is less akin to the



examples of dialogic interaction seen above. However, it is a vital part of the writing process, which will be covered in the next section.

## **THE WRITING PROCESS**

Languageing can be seen as an important part of the collaborative writing process, but it is not the only one. The act of writing is recursive and consists of several different subprocesses.<sup>1</sup> Storch (2005) makes the argument that one of the shortcomings of using peer review as a technique in the L2 writing class is that it emphasizes the product of writing at the expense of the process. Collaborative writing, on the other hand, stresses the importance of *how* learners write, not only *what* they write. The present section will focus on the studies that have examined the different writing stages that learners engage in as they collaboratively create a text.

### ***Face-to-face***

While there has been a far-reaching trend for researchers to investigate how learners focus on form and the nature of their LREs in L2 collaborative writing, few studies have examined the writing stages that L2 learners engage in while working collaboratively in a face-to-face environment. Two studies that shed light on these processes are Storch (2005) and Wigglesworth and Storch (2009).

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<sup>1</sup> The term “process” has many definitions. Perhaps one of the most influential is that of Flower and Hayes (1981), who proposed a model of writing containing processes and subprocesses that are recursive in nature. This paper will use a simpler definition of “process,” one which describes the writing stages (e.g., brainstorming, writing, revising) that learners take part in between the inception and completion of the text.

Storch's (2005) study investigated collaborative writing among adult ESL students in Australia. 18 students worked in pairs and five worked individually to complete a data commentary task. In addition to comparing the products of individual and collaborative writing through text analysis, Storch investigated the process of collaborative writing by examining transcripts of pair talk. She found that planning phases were short: on average, learners spent approximately one minute on planning. Most of the time spent on the task (15 to 25 minutes, depending on the pair) was taken up by the actual writing of the text. Furthermore, only three of the seven pairs went through a specific phase for revising, and those that did spent very little time on it (under two minutes). With one exception, all of the learners discussed and attended to linguistic issues throughout the whole process.

Storch found other differences between how the pairs approached the writing task. Some pairs, for example, wrote short sections of text and evaluated each before moving on to the next section. Others waited to evaluate what they had written until they had completed a much longer block of text, or even the whole text. Just as individuals may differ greatly in how they write a text, so, too, can pairs. In addition to paying attention to these three *phases* of planning, writing, and revision, Storch also looked at the different *activities* that learners engaged in while writing, i.e., generating ideas, LREs, deciding on structure, interpreting the graph, and "other." She found that of all these activities, learners spent by far the greatest amount of time on idea generation. According to interviews, learners found it valuable to discuss their ideas with each other. Thus,

interaction is not only beneficial for making linguistic decisions, but can also be helpful to learners when they are making decisions about the content of their writing.

Storch and Wigglesworth (2009) used a similar research design, with a larger number of students, to compare the products of individually- and collaboratively-written texts and to investigate the process by which pairs compose a text. Through analysis of the transcripts of pair talk, the researchers were able to identify three stages of writing: generating ideas, composing, and revising. The researchers then found the average percentage of task time spent on these stages. As in Storch (2005), it was found that the majority of time (77% in this case) was spent on the actual writing of the text, while 17% was spent on planning and 7% on revising. The authors also note that there was variation among the pairs, with some spending more or less time on certain stages than others. In addition to looking at these three stages, the researchers further analyzed sections of pair talk and categorized them according to six different categories: task management, idea generation, structure, revision, LREs, and other. Like Storch (2005), they found discussion of content took up the greatest percentage (48.92%) of learner interaction. During much of this discussion of content, students brainstormed ideas in point form for later inclusion in the text. Compared to the time spent on discussion of content, relatively little time was spent on discussing task management, attending to the structure of the text, or making revisions. The authors also observed that some learners revised throughout the task while others saved revision for the end, another finding that is similar to Storch's (2005) study.

Silva (1993), in an analysis of empirical studies on L1 and L2 individual writing, observed that L2 writers generally engage in less successful idea generation than L1 writers. Both Storch (2005) and Wigglesworth and Storch (2009) discovered that learners collaborating in pairs spent a good deal of time verbally interacting to decide on the content of their texts. Learners in Storch's (2005) study reported finding this useful. Collaborative writing may be a useful pedagogical tool for encouraging L2 writers to spend more time on idea generation. If learners can work together and use their peers as sounding boards, they may be more likely to generate better ideas, which may in turn improve the overall quality of their texts.

There is a scarcity of research on the processes involved in writing when L2 learners work together in a face-to-face environment (setting aside the focus on languaging and LREs). Furthermore, both of the studies mentioned above looked at adult ESL learners in Australia. More investigation of writing processes in different educational contexts and with different languages may be a fruitful area for future research. Fortunately, studies on online collaborative writing have investigated this area to a greater degree.

### *Online*

Some wiki tasks are highly staged, requiring learners to participate in separate phases of writing such as drafting, revising, editing, and publishing (Lee, 2010) or planning, drafting, revising, editing, and publishing (Chao & Lo, 2011). In Chao and Lo's study, learners were assigned separate stages for revising content and for editing

grammar and vocabulary. However, when revising content, they also focused on form, and vice versa. Later in the assignment, some learners revisited the planning stage. Rather than just going through the stages set out for them in a linear manner, therefore, the learners experienced the recursive nature of the writing process.

In less structured tasks, wiki pages can be analyzed to determine how learners choose to approach the writing process when working relatively autonomously (i.e., in the absence of explicit subtasks or guidelines). It is easy to gain access to these learners' writing processes by analyzing the archived pages of a wiki and looking at the history of comments and revisions that have been made.

Kost (2011) investigated the types of strategies used and revisions made by intermediate-level university students of German as they wrote essays in pairs. There were four pairs (eight learners) in her study. Kost found variation among the different pairs. Some learners partook in a distinct pre-writing phase where they discussed how to use the wiki or brainstormed the content of their essays. Other pairs either did very little brainstorming or none at all. There was also variation with regard to the addition of content and the revision of grammar. Three of the four pairs edited grammar while attending to content revisions. Some pairs took more time to write their texts than others and had more drafts leading up to their final text. One of the four pairs did not engage in a large-scale revision process after completing their text. Interestingly, the learners also differed in how they used the wiki tool, with some using the text to discuss revisions and others using a separate discussion page.

Elola and Oskoz (2010) directly compared the writing processes of individuals and pairs writing argumentative essays using wikis. The learners in their study were eight advanced L2 learners of Spanish enrolled in a Spanish writing course at a U. S. university. All learners worked collaboratively to write their first text and then individually to write a second text. To find out about the learners' writing processes in both tasks, the researchers analyzed and categorized segments of their wiki drafts. The categories were content, editing, grammar, organization, references, structure, and vocabulary. Across both individual and pair tasks, learners focused primarily on content (first) and organization (second), followed by editing and grammar, then vocabulary and structure. References came last. (The greater focus on content than form is a trend that has been observed in multiple studies and will be addressed shortly.)

The percentage breakdowns of time spent on each of the seven categories were similar between pairs and groups. However, three major differences emerged in how the individuals tackled their task compared to the pairs. The first dealt with structure. Pairs were more likely to decide on the structure of their essay in the beginning stages and then stick closely to it, whereas individuals were more apt to make structural decisions and changes at various points throughout the task. The second difference was related to thematic sentences. Individuals showed a greater tendency to preserve the thematic sentences they had come up with, while pairs tended to change them throughout the task. The final difference was that pairs were more likely to edit the grammar and vocabulary of their text throughout the entire writing process, while individuals generally saved editing for after they had completed their texts. The authors do not discuss the

implications of these findings, but it can be inferred that learners working in pairs may engage in better initial planning of the overall structure of an essay while remaining flexible on smaller details such as thematic sentences. Pairs may also save themselves some work at the end of the task by ensuring that they continually edit the text as it is being written. Thus, working in pairs may help learners adapt more effective approaches to writing in terms of both planning and editing. Replications of Elola and Oskoz's study may provide evidence to further confirm whether these trends occur among other students in different language learning contexts.

In this study, learners also used voice and text chats at least once in their collaborative assignments. An analysis of chat transcripts demonstrated that the majority of learner interaction (51.94%) focused on content, followed by structure (15.55%), sources (14.84%), grammar (7.77%), organization (6.71%), vocabulary (2.12%), and editing (1.07%). The chat transcripts were also divided according to the type of interaction learners were engaging in. 44.10% of the time, they were showing agreement or disagreement with each other's ideas; this was followed by task planning (16.92%), providing opinions (15.90%), providing feedback (11.79%), and dividing the work (11.28%).

The chat-mediated communication in this study is similar to the verbal interaction described in studies on face-to-face collaborative writing (Storch, 2005; Wigglesworth & Storch, 2009). In both the online and face-to-face studies, learners discussed issues of content with each other. As mentioned in the previous section on face-to-face

collaborative writing processes, learner discussion of content may lead to more refined ideas and better texts.

Silva (1993) has identified planning as a composing sub-process that tends to be neglected by L2 learners. Importantly, a notable amount of planning has been observed in the collaborative work of L2 learners in studies by Elola and Oskoz (2010; online) and Wigglesworth and Storch (2009; face-to-face). An almost identical percentage (roughly 17%) of learners' interaction was spent on task planning in these two studies. This is a substantial percentage, and may provide further support for the use of collaborative writing to facilitate learner attention to planning. Further research should seek to determine if there is a significantly different amount of time spent on planning between individuals and pairs or groups.

Another area of interest with regard to the writing process is the focus of learners' attention (i.e., content vs. form). Researchers who have differentiated between focus on content and focus on form in learners' revisions have found that content receives much more attention than form in these writing environments (Elola & Oskoz, 2010; Kessler, 2009; Kessler et al., 2012; Lee & Wang, 2013; Mak & Coniam, 2008; Woo, et al., 2013). Woo et al. (2013) defined "content" as referring to "idea development, audience, purpose, and organization of writing" (p. 284). The authors interpreted learners' primary attention to content as a positive phenomenon.

Kessler (2009) similarly found that learners working on a wiki paid greater attention to content than to form. In the study, 40 Mexican pre-service English teachers finishing their B.A. at a Mexican university worked on the same wiki. Their assignment



was to define the term “culture” using what they learned in their class. Kessler found that meaning-related revisions greatly outnumbered form-focused revisions. Although the learners edited and revised the wiki, they often overlooked formal errors that they were later able to easily correct (in interviews with the researcher).

Unlike Kessler and Bikowski (2012), where forty learners worked together on one wiki, the learners in Kessler et al. (2012) worked in groups of three or four to write research papers using Google Docs. The researchers noted that learners made both language-related contributions, or LRCs (e.g. related to form or meaning), as well as non-language related contributions, or NLRCs (e.g. related to formatting or task planning), “fluidly throughout the writing process” (p. 103). LRCs vastly outnumbered NLRCs, with the majority of LRCs focusing on meaning rather than on language. Examples of meaning-related LRCs were the addition, deletion, and replacement of text.

Learners across studies have differed in the degree to which they made form-focused (as opposed to meaning-focused) revisions. In one case, form-focused revisions were minimal (Kessler, 2009). In others, learners focused to a greater extent on form (e.g. Lee, 2010). Many factors may be at play in determining the amount of focus on form, including task type. Lee’s (2010) tasks, for example, were specifically designed to elicit certain linguistic forms.

In more open-ended tasks where there is less emphasis on particular grammatical features, learners across studies have demonstrated variation in the types of linguistic features they attend to the most. Kessler et al. (2012) found that the two categories that made up the largest percentages of form-focused contributions were spelling changes and

punctuation changes. In contrast, Kost's (2011) learners paid the most attention to verb forms and lexical revisions. This contrast may be due in part to language proficiency or task type (it should be noted that the assignments in Kost's study were graded, while those in Kessler et al.'s study were not). More research is needed to determine what linguistic forms learners attend to when revising a wiki, and what influences their decisions to focus on these forms.

A further area of interest with regard to the writing process is the nature of learners' contributions to the text. A few studies have investigated the nature of individual contributions to wikis, distinguishing between acts such as adding text, deleting text, reorganizing text, synthesizing information, and making formal revisions. Perhaps not surprisingly, it has been found that the addition of text makes up the largest percentage of learner contributions to the wiki (Kessler, 2009; Mak & Coniam, 2008).

Kessler and Bikowski (2010) analyzed the same data from Kessler's (2009) study and found that the most frequent revisions of the text were, in order of frequency: adding information, deleting information, and clarifying or elaborating on what had already been stated. There was a lack of synthesis, however, and the researchers interpreted this as evidence that learners were not using critical thinking skills when writing the text. Learners were also found to have approached the text in three distinct stages: "build and destroy," "full collaboration," and "informal reflection" (p. 48). The first, "build and destroy," involved learners engaging in the wholesale creation and deletion of text. By the end of this stage, the learners were satisfied with the existing text and moved on to the second stage, "full collaboration," where learners revised the text but refrained from

destroying it in its entirety, as they had done in phase 1. The final stage, “informal reflection,” had not been anticipated by the researchers. In this stage, learners used the wiki as a sort of discussion forum where they wrote individual informal messages to the instructor of the course. It should be noted that only in the last stage did all of the students participate in the wiki activity.

These two studies (Kessler, 2009; Kessler & Bikowski, 2010) may serve as a cautionary tale: although the wiki itself underwent a process of construction, learner participation did not appear to show sustained levels of engagement with the wiki text. If a large number of learners work together on one wiki in an unstructured task, they may exhibit a low level of participation and consequently miss out on opportunities to brainstorm, plan, interact, write, and revise as part of a recursive writing process.

One final area that deserves attention is how learners approach the act of revising. Bradley et al. observed that groups with a collaborative orientation<sup>2</sup> produced a greater number of revised versions of each text. Woo et al. (2013) studied the behavior of 119 primary students in Hong Kong as they worked on two writing tasks in a wiki environment in their L2 (English). They found that the learners wrote comments for each other, and that these comments often led to revisions. The revisions, in turn, were believed to have led the learners to produce higher-quality pieces of writing than they otherwise would have. Further research is required to determine whether there is indeed a link between learners’ revision behavior and the overall quality of their wiki texts.

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<sup>2</sup> See pp. 60-65 of this paper for a discussion on collaborative patterns of interaction versus other types of interaction in online collaborative writing tasks.

Research that has addressed *how* learners write when collaborating with others suggests that verbal and online interaction and scaffolding may prove beneficial to learners by encouraging planning, idea generation, formal editing, and revision of content. The instructor can explicitly encourage such practices by incorporating different stages into a writing task (Lee, 2010; Chao & Lo, 2011). Real-time interaction (either verbal or mediated by online chats) has facilitated decisions about the overall structure of a text (Elola & Oskoz, 2010) as well as discussion about content and ideas (Storch, 2005). In addition to discussing content, learners in both face-to-face and online collaborative writing environments have demonstrated attention to issues of form. Such discussion can improve the accuracy of their texts, and can also lead to language learning.

## **LANGUAGE LEARNING**

Several studies on collaborative writing in face-to-face settings have used pretest/posttest designs to determine the nature and extent of language learning that results from working with others to write a text (Brooks & Swain, 2009; Kim, 2008; Kuiken & Vedder, 2002; Swain & Lapkin, 2008; Watanabe & Swain, 2007). The data from these studies generally show that when learners notice the gaps in their linguistic knowledge and engage in languaging, they tend to remember the resolutions that they collaboratively came up with and can produce them later, either on posttests or in subsequent output. With the exception of Castañeda (2012) and Castañeda and Cho

(2013), studies on online collaborative writing have generally not investigated language learning as a consequence of joint construction of online texts.

### ***Face-to-face***

Kim (2008) looked specifically at the effects of collaboration on vocabulary gains. In her study, 32 intermediate learners of Korean, studying at a Korean university, took a vocabulary pretest, performed two dictogloss tasks, and then took a vocabulary posttest. Half of the learners worked individually to do the dictogloss tasks while the other half worked in pairs. The researchers investigated both the nature of the learners' LREs as well as any gains they made from pretest to posttest. LRE data came from transcripts of pair dialogue (from the pairs) and from transcripts of think-aloud protocols (from the individuals). The researchers found that pairs correctly solved more LREs than individuals and that pairs also performed better on the vocabulary posttests, thereby showing that there may indeed be a link between what learners attend to during their interaction and their language learning gains, at least in the realm of vocabulary. One caveat that must be acknowledged in this study, as Storch (2011) points out in her review of the literature, is that the test measured the learners' receptive vocabulary but not their ability to productively use the lexical items. Further research is needed to determine whether learners who partake in collaborative writing tasks can use the vocabulary from those tasks, by employing delayed posttests or by analyzing subsequent learner output.

Brooks and Swain (2009) observed four intermediate-level ESL learners studying in an intensive language program in Canada as they worked in pairs to write a text in

response to an open-ended picture prompt. The learners' text was used as a pretest. Subsequently, the learners worked together to compare this text with a reformulation written by a native English speaker and then, in a separate stage, discussed what they noticed with the reformulator. Finally, they (individually) received their original drafts and were instructed to revise them; this final activity was the posttest. In this study, learners had three different "sources of expertise" (p. 147): their peers, the reformulated text, and the author of the reformulation. Each of these sources could potentially provide scaffolded linguistic assistance to the students. From the point of view of collaborative writing, it is necessary here to focus on the *peers* as a source of expertise and to ignore the reformulation and the reformulator (although it is useful to point out that collaborative writing tasks can work well with reformulation used as a feedback technique—see, for example, Lapkin et al., 2002; Swain & Lapkin, 2002; Tocalli-Beller & Swain, 2005). In their study, Brooks and Swain found that peer expertise was valuable given the accuracy with which the pairs scaffolded each other linguistically. They also found that peer expertise was a greater predictor of posttest accuracy than the other sources of expertise. The authors interpreted their results within the framework of Vygotsky's Zone of Proximal Development (ZPD). When learners work in pairs, they construct an initial ZPD. As they encounter new levels of expertise (e.g. through a reformulation of their text), they can expand their ZPD. This interpretation, combined with the results of the study, seems to suggest that peers can offer each other the best feedback because it is more likely to be what they are developmentally ready to learn. If

this is the case, it could be a strong argument in favor of the use of collaborative writing activities for language learners' grammar improvement.

Unfortunately, collaborative writing does not always show positive results for grammar learning, as Kuiken and Vedder (2002) concluded. In their study, 34 students of English at a Dutch high school performed two dictogloss tasks. 14 worked individually while the rest worked in groups of three or four. The dictogloss incorporated the use of passive constructions, and learners also took pre- and posttests that measured their knowledge of the passive voice. The researchers analyzed transcripts of the learners' interaction as they wrote and found that the groups noticed passive forms during the collaborative writing process. However, when the individuals' and groups' finished texts were analyzed, there was no significant difference found between them with regard to the number of passive constructions included therein. Furthermore, immediate and delayed posttest results showed no significant differences between the individuals' and groups' demonstrated knowledge of the passive voice. While interaction led learners to notice passive forms, it did not appear to facilitate acquisition of the forms as evidenced in the students' written products. This lack of acquisition may be linked to the difficulty of the grammatical form involved in the study. The passive voice can be challenging for learners of English. Even though the learners had received prior instruction on this grammatical form, as the researchers note, it is possible that it was still not within their reach, developmentally speaking.

One pedagogical technique that may help facilitate language-learning gains is the use of a mini-lesson prior to the collaborative writing task. Perhaps the inclusion of such

a lesson would have made a difference in Kuiken and Vedder's study. Swain and Lapkin (1998) included a mini-lesson in their study on the language-learning potential of a collaborative jigsaw task. In this study, 35 Canadian French immersion students in the 8<sup>th</sup> grade worked in pairs to complete the task after receiving a mini-lesson on French reflexive verbs. In addition, pre- and posttests captured sentence-level language learning that resulted from the task. The researchers found a significant positive relationship between the number of LREs produced by each pair and their scores on the posttests, suggesting that the interaction between the learners as they attended to language during the collaborative writing task resulted in language learning.

### ***Online***

Studies on collaborative writing in online environments have generally not addressed the issue of language learning. Two exceptions are the studies by Castañeda (2011) and Castañeda and Cho (2012) on the effects of wiki-based writing on the acquisition of the Spanish preterite and imperfect. Learners in both studies were U.S. university students studying Spanish at an elementary level, and both studies focused on grammatical aspect in Spanish by investigating learners' acquisition of the preterite and imperfect.

Castañeda (2011) examined the effects of instruction on learners' receptive and productive knowledge of the Spanish preterite and imperfect. The study involved pre- and posttests measuring this knowledge and included a treatment period where learners wrote three short compositions. Learners were given two to three weeks for each of these



written assignments. Learners in the control group worked individually to handwrite their compositions or to write them on a word processor. Learners in one experimental group wrote their compositions individually on blogs, while learners in the other experimental group worked in groups to write theirs collaboratively on a wiki (although the size of the groups is not specified). In addition, while learners in the control group received written prompts for their writing assignments, learners in both of the experimental groups were asked to write their compositions in response to photo or video prompts. These images and videos were meant to provide learners with context that would facilitate their decisions about which aspect to use when describing main events (where the preterite would be more appropriate) and background descriptions (where the imperfect is usually used). Therefore, this study is not specifically about the benefits of collaborative writing per se, but, rather, about how instruction using web 2.0 technology (blogs and wikis accompanied by photos and videos) compares to instruction using “traditional” technology, such as word processors.

The results of posttests demonstrate that there was no significant difference between the control and experimental groups in terms of gains in production, but that there was a significant difference in receptive gains. Furthermore, learners in the experimental groups received higher mean scores on all of the posttest measures (reception and production) than learners in the control group, suggesting that the web 2.0 technologies used did indeed result in a slightly better command of the target structures. Furthermore, students using blogs outperformed students using wikis. Although the differences in scores was not significant, this is still an intriguing finding and suggests

that individual writing on blogs may be more conducive to language learning than collaborative writing using wikis. It should be noted, however, that certain variables were not controlled for. For example, each class had a different teacher with a different teaching style. As the author notes, some instructors used only Spanish to teach grammar, while others used both English and Spanish.

Castañeda and Cho (2012) conducted a study that looked more directly at collaborative writing using wikis. In this study, 53 students learning Spanish at a university worked in groups of three or four to write a total of four stories over the course of 12 weeks. As in Castañeda's (2011) study, the writing prompts were videos. Learners first watched videos, such as an animated version of "Little Red Riding Hood" and made individual contributions to the wiki, writing sentences using the past tense. After receiving feedback from the instructor, learners discussed (in class) how to revise their text, and then used the wiki to make revisions as a group. The researchers note that the wiki texts themselves showed that learners were correctly using the preterite and imperfect in their narrative stories. This suggests that online collaborative writing can help even elementary-level Spanish learners to focus on, and improve, their use of the preterite and imperfect at the discourse level, and that discourse-level writing tasks may be more beneficial for the learning of aspect in Spanish than sentence-level exercises.

In addition to text quality, the study investigated learners' linguistic gains through pre- and posttests. The tests showed that learners made significant improvements in their knowledge of the Spanish preterite and imperfect. Unfortunately, there was no control group in this study, so it is impossible to say whether the gains were due to the use of

wiki-based collaborative writing or whether they were the result of normal instruction carried out over time.

At present, research on the link between online collaborative writing and language learning is scarce, although many studies have looked into learners' perceptions of their own language learning. Clearly, more research is needed to determine the effects of online collaborative writing on language learning. What both of the above studies demonstrate, nonetheless, is that one of the advantages of the wiki platform is the ease with which other forms of media, such as videos, can be integrated into an assignment. Video and audio files can act as input for learners and add to their exposure to the L2 outside of the classroom. More research should be done to determine how the presence or absence of these media additions to a collaborative writing task may affect learners' engagement with the writing task, their language learning, and the quality of learners' finished written products.

## **TEXT QUALITY**

A number of studies on face-to-face collaborative writing have attempted to determine the effects of collaborative writing on learners' final texts, comparing these to the products of individually-written texts. Unfortunately, an investigation into text quality is missing from most studies on online collaborative writing, with a very small number of exceptions.

### *Face-to-face*

Storch (2005) and Wigglesworth and Storch (2009), and Shehadeh (2011) compared texts written by pairs and texts written by individuals, while Fernández Dobao (2012) looked at texts produced by individuals, pairs, and groups of four. While the results across studies are not always consistent with each other, they show a general trend in collaborative writing producing higher-quality results.

In Storch's (2005) study, students in an ESL writing class at an Australian university chose to work either in pairs or individually to perform a data commentary task. The texts were analyzed according to quantitative measures for fluency, complexity, and accuracy. They were also given qualitative scores according to a global evaluation rubric. Storch found that the texts written by pairs scored higher on quantitative measures of accuracy and complexity. They were also shorter than the individually-produced texts, but this was seen as a positive finding because they were more to the point and included fewer unnecessary details than the texts written by individuals. The pair-produced texts also enjoyed greater clarity owing to the use of highlighting statements. Finally, Storch found that the texts produced by pairs received higher average qualitative scores than those produced by individuals, with some even attaining a score of 4/5, which no individual texts succeeded in doing. Storch's study is valuable in that it looks at the final written products from both purely linguistic and also global standpoints. The small number of participants in the study, however, meant that no significant differences were found.

Working with a larger group of students (N = 144), Wigglesworth and Storch (2009) compared the processes and products of individual and collaborative writing. Like Storch's (2005) study, they used quantitative measures of fluency, complexity, and accuracy, but did not assess the texts holistically. Their findings differ slightly from Storch's (2005). Pair-written texts were *not* characterized by a greater degree of complexity (as they had been in Storch's study), but *were* characterized by a significantly higher number of error-free T-units. Thus, the texts written by pairs were more accurate than those written by individuals.

Shehadeh's (2011) longitudinal study of beginning EFL learners in Saudi Arabia used an experimental design to examine the differences between individually- and collaboratively-produced texts. Over the course of a sixteen-week semester, the learners wrote a total of 12 paragraph-long texts. Two additional assignments served as pre- and posttests. Most of these texts were descriptive or narrative in nature. 20 learners worked individually and 18 worked in pairs. The learners' tests were graded holistically using a rating scale covering content, organization, vocabulary, grammar, and mechanics. Unlike the studies by Storch (2005) and Wigglesworth and Storch (2009), Shehadeh found that texts written by pairs were *not* more grammatically accurate than those written by individuals. However, the results of the holistic assessment showed that collaboration had a positive effect on content, organization, and vocabulary.

Fernández Dobao's (2012) research investigates how the number of learners involved in a collaborative writing task may affect the final written products. 111 intermediate FL learners in their second year of Spanish at a U.S. university performed a

jigsaw-like task. 21 students worked individually, 30 in pairs, and 60 in groups of four. As in the studies by Storch (2005) and Wigglesworth and Storch (2009), the learners' texts were coded for fluency, accuracy, and complexity. One finding in common with Storch (2005) was that the individual writers in Fernández Dobao's study wrote longer texts than writers working collaboratively: the individuals' texts were longer than the pair texts and significantly longer than the group texts. While there were no significant differences found in complexity among the three types of texts, some differences in accuracy levels appeared. Pairs produced more accurate texts than individuals, but the difference was not significant. Groups produced more accurate texts than either pairs or individuals, with statistical significance reached in one measure of accuracy when compared to pairs and four measures of accuracy when compared to individuals.

Except for Shehadeh's (2011) study, all of the studies mentioned above found an advantage for collaborative writing in the area of accuracy (although *significantly* greater accuracy was only found in Wigglesworth and Storch, 2009). Perhaps one reason that collaborative writing was not beneficial for accuracy in Shehadeh's study is that the learners were at too low of a proficiency level to offer each other grammatical scaffolding, a point that the author himself suggests. Still, it is encouraging that the learners in this study made gains in other measures of text quality, namely content, organization, and vocabulary.

## *Online*

Research on online collaborative writing has not generally drawn direct comparisons between individually- and collaboratively-produced texts. This may be because (in the case of wiki-based writing, at least), the tool itself is not meant for individual writing. As Lund (2008) observes,

A wiki affords collective production, networked structures, and shared spaces...although we have seen that it is the activity and not the technology per se that makes the difference. A wiki, at least the type we deal with here, does not make sense on an individual level. (p. 50)

Despite this point, one study directly compared individual and collaborative L2 writing on wikis. The learners in Elola and Oskoz's (2010) study were instructed to use wikis for both individual and collaborative tasks "so that [they] did not have to change mediums" (p. 54). Learners first worked in pairs to write an argumentative essay and then did a similar task individually. They had 15 days for each task and had to submit first and final drafts. A comparative analysis of the final versions from both the collaborative and individual tasks revealed no significant differences in terms of fluency, accuracy, or complexity between the two groups. A comparison of the first and final drafts within each task type (individual and collaborative) further showed that texts written by individual writers had significant increases in fluency and accuracy from their first to their final drafts, while no significant differences between the collaborative pairs' first and final drafts appeared. In some cases, a decrease in fluency within the pairs' texts was observed. A comparison can be drawn from the results of this study with those of Storch

(2005). The first regards fluency. Storch's (2005) findings showed that collaborating pairs were more succinct than individuals and had smaller word counts. Similarly, the individual writers in Elola and Oskoz's study made their texts longer while the pairs made theirs shorter. It is also noteworthy that *unlike* the collaborative pairs in Storch's study, those in the present study did not seem to benefit from peer support when it came to issues of grammatical accuracy, whereas individual writers actually made their texts more accurate.

Whereas Elola and Oskoz compared collaborative and individual writing in an online context, Woo et al. (2013) looked at the differences between wiki-based and non-online collaborative writing. The learners in this study were 119 primary school students in three classes learning English in Hong Kong. They worked in groups of four to write two texts via wiki: a biography and a poster. The researchers were not able to use an experimental design with a control group engaging in face-to-face writing. However, they partially circumvented this limitation by comparing the wiki texts in the study with other, previous written texts that had been produced in the same classes but in a face-to-face (non-wiki) environment. All texts were evaluated according to content/organization, language, visual graphics, and total analytical grand scores. The researchers found that the wiki group writing was of a higher quality than the non-wiki group writing. Feedback from the class instructors about the quality of the learners' wiki writing support these findings from the quantitative data. Throughout the wiki writing process, the learners posted comments for each other that often led to revisions. The researchers concluded that the opportunity to make these revisions contributed to a higher-quality written



product. The study's results must be interpreted with caution because, as the authors themselves admit, learners make progress over time, and the wiki group writing occurred later than the non-wiki group writing. In spite of this, however, the authors emphasize that "it is hard to deny the influence of revision on writing performance" (p. 301).

While Elola and Oskoz (2010) and Woo et al. (2013) go some way in investigating the text quality of collaborative wiki-based writing by comparing it to either individual online writing or to collaborative non-online writing, these are but two studies and it is difficult, and perhaps impossible, to generalize from these results. More research in this area could lead researchers to better understand why and how collaborative writing in online environments may lead to better-quality texts. Further research could compare the quality of individual and collaborative writing by having learners use different SCMC tools, e.g. blogs for individual writing and wikis for collaborative writing.

## **LEARNER PERCEPTIONS OF COLLABORATIVE WRITING**

A small number of studies on face-to-face collaborative writing and a larger number of studies on online collaborative writing have made use of surveys, questionnaires, and interviews to gather data regarding learners' attitudes toward collaborative writing tasks. The results of these studies will be explored in this section.

### ***Face-to-face***

Studies that have specifically set out to determine learners' perceptions about face-to-face collaborative writing include those conducted by Fernández Dobao and

Blum (2013), Shehadeh (2011), and Storch (2005). These three studies took place in diverse contexts: the first in an intermediate Spanish class, the second in a lower-level EFL class, and the last in an intermediate ESL class. Learners in the first study had experience with pair and group work in class, while this type of pedagogical approach was completely new for learners in the second study. Fernández Dobao and Blum's study is important because it included not only dyads, but also groups of four, while Shehadeh's study is valuable because it is one of the few longitudinal studies on face-to-face collaborative writing. All three studies are of significance due to their findings regarding the observable differences between individually- and collaboratively-produced texts. For these reasons, it is instructive to learn how participants in these studies felt about the activities they engaged in. (It should be noted that one problematic aspect of Shehadeh's research design is that the participants had to respond to questionnaires in the L2. Given their low proficiency level, it is possible that learners expressed only part of what they truly felt.)

In addition to these studies, other researchers have also explored learners' views of the collaborative writing experience in order to further understand and contextualize quantitative measures (e.g. Kim & McDonough, 2008). Questionnaires and surveys for L2 learners have tapped into their views on how enjoyable and effective they found the tasks, whether they preferred them to individual writing, how they perceived working with partners of certain proficiency levels, and how comfortable they felt working with others to produce a text.

In general, learners have reported positive feelings about their collaborative writing experiences. 16 of the 18 learners interviewed in Storch's (2005) study expressed positive views about working in pairs to do a writing activity. Of the 55 students who responded to Fernández Dobao and Blum's (2013) questionnaire, only four said they would have preferred to work alone. Similarly, 16 of the 18 learners in Shehadeh's (2011) study expressed a desire to write collaboratively again in the future, while only two said that they would like to have the option to write individually.

Fernández Dobao and Blum's (2013) study is the only one that had learners work in pairs or groups of four, and participants elaborated on the perceived advantages of these two conditions. Those who worked in groups in the study reported that this condition allowed for creativity and a healthy exchange of ideas, that the atmosphere was enjoyable, and that more members meant more sources of vocabulary and grammar knowledge. Learners who worked in pairs felt that working with only one partner made the activity efficient and allowed for a higher degree of participation from each member.

Participants have also been asked for their opinions on the effects of collaboration on text quality. Learners in Shehadeh's study felt that collaboration led to better planning and idea generation. More than half of the learners in Fernández and Dobao's study believed that collaboration had been beneficial for the grammatical accuracy and vocabulary use in their texts. Learners who worked in groups found collaboration even more beneficial in this respect than learners who worked in pairs. As one group member said, "there were definitely words that I would have had to look up...but with the group combined, we know more words" (p. 373). However, they were

less convinced that collaboration had resulted in better text content and organization. Roughly two thirds of them did not find collaboration useful for this. This may be partially due to a task effect. Although the authors do not discuss this, it is possible that learners would have relied on and valued each other's content suggestions more had the task required learners to come up with their own content. As it was, the task in this study required participants to write a story based on a series of pictures. Doing this type of task does not require much thought about content beyond an interpretation of what is happening in the pictures. A more open-ended writing prompt may have elicited more substantive content suggestions and, consequently, a heightened appreciation for these suggestions.

In Storch's (2005) study, some learners expressed the opinion that collaboration offered them the opportunity "to compare ideas and to learn from each other different ways of expressing their ideas" (p. 166). In the words of one learner, "when I'm working in pairs we can get more ideas...because different people have different ideas. So we can comparing the important ideas together that make a paragraph" (p. 166). It can be inferred that having a larger pool of ideas to choose from would lead to a better-quality text.

In addition to the effects of collaboration on text quality, learners were asked if they felt that collaboration had led to language learning. Due to the interaction inherent in collaboration, learners in Shehadeh's (2011) study felt it was beneficial for both their written and oral skills. One third of the participants in Storch's (2005) study felt that collaboration had helped them learn vocabulary and grammar. In Kim and McDonough's

(2008) study, two of the eight learners acknowledged that collaboration had a positive effect on vocabulary learning while only one found it beneficial for grammar. In contrast, nearly 70% of the participants in Fernández Dobao and Blum's (2013) study felt that their task had facilitated grammar and vocabulary learning. Interestingly, this was higher than the percentage of learners who felt that collaboration led to better use of grammar and vocabulary in their finished texts. With regard to grammar, learners felt that the task presented a good opportunity to deepen their knowledge of the Spanish preterite and imperfect, an aspect of grammar that had been taught to them before they did the task.

Even though the learners in Fernández Dobao and Blum's (2013) study had a positive view of the effects of collaboration on language learning, it should be noted that simply collaborating on a task may not lead to the long-term learning of a linguistic item. To illustrate, learners in this study felt that they had retained some of the words that they had learned from their peers because they had a new opportunity to encounter these words after the task, on the vocabulary posttest. However, "they also mentioned that they had not retained other words discussed during the task because they had only had to use them once and had had no opportunity to repeat them in the following classes" (p. 374).

Students also expressed their views on the experience of collaborating with peers who were at the same proficiency level or a different one. While many of the learners in Fernández Dobao and Blum's (2013) study found collaboration helpful for choosing grammatical forms and vocabulary items, some felt that working with peers who were at the same level was not helpful. According to researchers, the following quotation was indicative of the opinion of a sizeable minority of the participants: "we all know the same

vocabulary and did not know how to say the same vocabulary” (p. 373). Another learner, reflecting on grammar, noted, “most of the people in the group had a similar level of grammatical knowledge, so it was not helpful to have four of us to edit it” (p. 373).

Somewhat similar results were found in Kim and McDonough’s (2008) study. The majority of learners who responded to a questionnaire indicated a preference for working with a more advanced partner to working with an intermediate partner, partly because advanced partners could provide explanations of grammar points and vocabulary. They felt that working with a fellow intermediate learner, on the other hand, was less likely to lead to linguistic resolutions, and learners reported that they felt less confident about the resolutions that they did arrive at. Not all learners in this study felt the same way, however. Two indicated that advanced partners “tended to dominate the conversation... [The learners] felt that they could not express their ideas while working with a more fluent interlocutor and that they did not feel confident enough to make suggestions” (p. 223). Some students in Storch’s (2005) study expressed similar opinions.

A small number of learners have expressed some concerns about writing collaboratively. Working with peers can be an unusual experience at first for learners who are used to teacher-fronted instruction, as Shehadeh (2011) found. Over time, however, learners in his study became more enthusiastic about working with each other. One learner noted, “I learned how to work with other students and learn from them” (p. 296). Most of the learners were also happy with the instructor’s decision to have them change partners every two to three sessions.

At times, learners may be reluctant to call attention to errors they notice in their texts. One learner in Fernández Dobao and Blum's (2013) study stated, "there are lots of little problems in our story's grammar, but I do not want to point them out and seem nit-picky [sic]" (p. 374).<sup>3</sup> Some learners in Storch's (2005) study expressed a similar hesitation to point out errors in their peers' contributions. One participant expressed her feelings as a mix of not wanting to offend and not being sure if her own suggestion would be correct: "you can't just say stop you are wrong...or maybe, maybe I am wrong" (p. 167).

Some final learner views point to a need for educators to make the purpose and benefits of collaboration explicitly clear to their learners. One participant in Storch's (2005) study who was generally positive about the experience expressed the view that writing is inherently an individual activity. Two other learners in the same study felt negatively about the task and reported feeling uncomfortable during the collaboration because they were not confident in their own language skills. It is possible that these concerns could be somewhat allayed by a pre-task discussion on the purpose and benefits of collaborative writing as well as the importance of suggesting ideas and listening to others' ideas in a respectful way.

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<sup>3</sup> As was the case in many studies, this assignment was not graded. It is possible that the learners may have been more active in voicing their concerns about textual errors had they been expecting a grade.

## *Online*

There seems to be greater attention to learner perceptions in studies on online collaborative writing. This may be partially due to the fact that there are two worthwhile areas for investigation here: learners' views on collaborative tasks and learners' views on the technological tools and environments used for these tasks. Many researchers have posed research questions about how learners perceive online collaborative writing: Castañeda and Cho (2012), Chao and Lo (2011), Ducate et al. (2011), Elola and Oskoz (2010), Kost (2011), Lee and Wang (2013), Lee (2010), and Miyazoe and Anderson (2010). Questionnaires, surveys, and interviews have invited learners to share their opinions on topics such as the effects of online collaboration on the quality of their texts, the experience of working with others, and their level of comfort when editing each other's work.

As is the case with face-to-face collaborative writing, learners' perceptions about online collaborative writing have been found to be at least moderately positive. More than half of the learners in Lee's (2010) study preferred wiki-based collaborative writing to more traditional writing activities. Similarly, over 50% of the learners in Ducate et al. (2011) reported that they enjoyed and learned from the project. Participants have reported enjoying online collaboration (Castañeda & Cho, 2011; Ducate et al. 2011; Lee, 2010) and have expressed a wish to do similar activities again in the future (Kost, 2011).

Some learners' perceptions appear to be shaped by the wiki tool itself. The upper intermediate English students in Miyazoe and Anderson's (2010) study used wikis, blogs, and a discussion forum throughout a 15-week course and preferred using the wiki for



collaborative translation activities to using the other two tools for other tasks. This may be a reflection on both the task and the tool.

The online tools used in Elola and Oskoz's (2010) study were wikis and chats, and participants in the study saw a distinct value in each of the tools: chats were useful for deciding on larger structural issues of the essay while wikis facilitated attention to both global and local aspects of writing. Most learners who have worked with wikis have shown approval of the tool, expressing enthusiasm for the chance to use the technology (Ducate et al., 2011) and describing it as user-friendly (Chao & Lo, 2011; Kost, 2011). Wikis have also been described as a suitable tool for promoting teamwork in a low-anxiety setting and focusing learners' attention to issues of text organization (Chao & Lo, 2011).

Another area of interest is L2 learners' perceptions of the benefits of online collaborative writing for improving their writing skills. The majority of learners in Chao and Lo's (2011) study felt that wiki-based collaborative writing helped them improve their own writing. When asked if online collaboration improved their writing skills, the majority of learners in Elola and Oskoz's study claimed that collaborating via wikis and chats was beneficial for the content and organization of their essays, although only half found the wiki helpful for grammar and fewer than a half found the chats helpful for grammar.

According to some learners, wiki-mediated collaborative writing can help them become more self-aware writers (Castañeda & Cho, 2011; Chao & Lo, 2011). Some have also credited the online collaborative tasks with helping them write better individual in-

class compositions (Castañeda & Cho, 2011; Lee, 2010). In the words of one learner in Lee's study,

Having the opportunity to use wikis helped me organize and convey my thoughts more quickly during the in-class composition. I was able to gather ideas and come up with a plan, as if there were a mental map to guide my writing. (p. 266)

Learners have found it useful to observe how their peers edited the collaborative text (Elola & Oskoz, 2010; Castañeda & Cho, 2012). In addition, learners in Castañeda and Cho's study noted that reading what their peers wrote was beneficial for their own writing, although their enthusiasm was somewhat tempered by concerns regarding the accuracy of their own and of their peers' edits. According to the researchers, their concerns had some basis in fact, as it was observed that certain instances of editing changed correct forms into incorrect ones.

Carefully designed tasks may facilitate language and content learning. Learners in Ducate et al.'s (2011) and Lee's (2010) studies found the wiki task beneficial for learning about the target language culture. Some participants found it helpful that the wiki tasks allowed them to actively use language forms they had studied in class (Castañeda & Cho, 2012; Ducate et al., 2011; Lee, 2010). According to one learner, "wikis give us a chance to utilize what we've learned in a practical setting" (Castañeda & Cho, 2011, p. 10). In Lee's study, the tasks were communicative rather than being overtly grammar-focused (they included a story, a cultural report, a travel plan, and a letter). Nevertheless, one learner felt that the tasks provided valuable grammar practice:

I really liked how the wiki topics enabled us to use specific grammar points. Writing wikis served as an extension to practice what we had learned in class. After writing a few wikis, I understood better how words and grammar were used in context. I believe my Spanish has improved by contributing to wiki pages. (Lee, 2010, p. 266)

Wiki writing requires learners to work together as a team. Consequently, learners working on wiki tasks may develop a sense of responsibility to one another (Kost, 2011; Lee & Wang, 2013). Working with others may be a source of motivation and opportunities for sharing ideas and for language learning. It also requires effort and clear communication, and at times may pose a challenge. Students' satisfaction with a wiki project may be dampened when their peers do not contribute on time, thus forcing them to wait before they themselves can post (Castañeda & Cho, 2011; Lee & Wang, 2013; Lee, 2010). Another challenge may stem from the learners' perceived abilities of their peers (Castañeda & Cho, 2011). The more proficient English learners in Lee and Wang's (2013) study generally had a more negative view of collaboration as they felt they had little to learn from their less proficient group members.

Even though learners should work together as a team, they often favor feedback from the teacher over feedback from their team members. When learners receive feedback from both their instructor and their peers, they are more likely to assign importance to and act upon the instructor's feedback. This has been observed in their editing behavior (Woo et al., 2013) as well as in the reporting of their opinions (Arnold et al., 2012; Lee, 2010). Of course, this phenomenon has only been observed in studies

where learners received formative feedback from the teacher throughout the writing process.

In spite of the greater value learners place on teacher feedback, L2 learners in many of these studies express general appreciation for the support that they provide one another, citing the opportunity to collaborate as allowing them to achieve better organization and structure in their texts (Chao & Lo, 2011; Elola & Oskoz, 2010). Many have also voiced their appreciation of the opportunity to give and receive assistance with regard to language and content (Castañeda & Cho, 2011; Elola & Oskoz, 2010; Kost, 2011; Lee, 2010). Nevertheless, at times, learners hesitate to edit their peers' formal errors for fear that they may not be able to do so accurately (Castañeda & Cho, 2012; Lee, 2010). This hesitation may be linked to proficiency; it is perhaps noteworthy that learners in the two studies just cited were considered to be at an elementary proficiency level. It is possible that editing confidence grows as learners become more proficient language users.

Learners may hesitate to revise the writing of their peers because of a lack of editing confidence or possibly because they do not want to change or destroy what someone else has created. Some participants in Lee's (2010) study felt they should not alter content written by a peer without first asking for that student's consent. On the receiving end of revisions, a number of learners expressed frustration when their contributions were deleted (Lee & Wang, 2013; Lund, 2008). It is for these reasons that Arnold et al. (2012) recommend that teachers encourage learners to use the discussion board on the wiki to talk about proposed changes before making them.

Although many learners acknowledge that collaborative work is beneficial, not all of them are enthusiastic about it. Learners in Elola & Oskoz's (2010) study acknowledged some of the benefits of collaboration, but also maintained that they liked writing individually as it would allow them to develop a unique voice in their Spanish writing and to avoid having to defend their content or linguistic choices to a partner. The desire of these learners to maintain control over the task may be at odds with collaboration, but it is important to acknowledge that such a desire exists and that it is, at least in part, a natural result of the schooling they have undergone. In Lund's (2008) words, "historically and institutionally, schooling has cultivated mostly an individual approach to writing...Such an inheritance is not easily discarded or transformed" (p. 50). There are some steps that the instructor can take to help learners approach online collaborative writing with an open mind. These include careful task selection, a clear discussion about the purpose and potential benefits of collaboration, and the provision of training on how to use the collaborative tool as well as advice and guidelines on how to collaborate successfully. Learners should also be given several opportunities to collaborate so that they can become used to it, as learner attitudes can change over time, even within the span of one task (Lee & Wang, 2013). Taking these measures will help ensure that learners enjoy a fruitful and enjoyable collaborative experience.

## **IV. CONCLUSION**

### **PEDAGOGICAL IMPLICATIONS**

Collaborative writing has the potential to promote both L2 learning and writing development, and thus may come to play an increasingly important role in the L2 classroom. A wide range of studies has demonstrated that collaborative writing activities can be carried out in many different L2 teaching contexts and with students of various ages and proficiency levels. Assignments can be done in class or online and can be chosen to best suit the needs of the students in question. By allowing learners to rely on each other for help in the absence of an authority figure, collaborative writing can foster interdependent and autonomous learning while encouraging students to view each other as sources of expertise. Through discussion of language features, learners can increase their command of the linguistic and textual norms of the L2. Finally, many learners' positive perceptions of collaborative writing make it a potentially enjoyable and motivating type of activity that can complement classroom instruction.

Learners' perceptions of different tasks and the outcomes of these tasks on languaging, collective scaffolding, and language learning, are important factors to consider when implementing collaborative writing assignments. In face-to-face environments, tasks that have drawn learners' attention to grammatical form include language-focused tasks such as dictoglosses and meaning-focused tasks such as jigsaws (Swain & Lapkin, 2001). Essays and compositions can be suitable for more advanced learners who can not only scaffold each other with regard to formal linguistic issues, but also when making decisions

about structure, organization, register, and appropriateness for the intended audience. When it comes to online wiki-based tasks, highly structured activities such as those used in Lee's (2010) study have been found to be beneficial and enjoyable for lower-level learners. For more proficient learners, tasks that afford a greater deal of autonomy (e.g., Lund, 2008) may be appropriate at times as well, especially given that learner autonomy has been linked to motivation (Dickinson, 1995).

Face-to-face and online varieties of collaborative writing each have their unique benefits for the classroom. When learners work together in person, they can request and give immediate feedback. Even the simple act of being able to see each other may have a positive effect on learners' interaction; indeed, when learners do not work in person, they may find it challenging to express themselves fully (Lee & Wang, 2013). On the other hand, the lack of immediacy in asynchronous online environments may be advantageous for reflective learners who prefer to have time to think before making contributions to the text. Felder and Henriques (1995), citing Kolb's (1984) distinction between active and reflective learners, state that "active processing involves doing something in the external world with the information—discussing it or explaining it or testing it in some way—and reflective processing involves examining and manipulating the information introspectively" (p. 24). From these definitions, it seems likely that both synchronous and asynchronous online collaborative writing activities may appeal to active learners while reflective learners may prefer asynchronous tasks. Incorporating both types of tasks could potentially appeal to a wide variety of learners styles.

Not all learners respond well to collaboration (see, for example, Weissberg, 2008).

Learners may feel inhibited by personality traits or a lack of confidence in their language abilities (Storch, 2005). It is possible, however, that proper training, open discussion between the instructor and students about the goals of collaborative writing, carefully designed tasks, and the opportunity to engage in collaborative practices repeatedly over a period of time, may help learners become used to the tasks and, more importantly, demonstrate how these tasks can benefit them.

Many learners will find collaborative writing to be a new experience; thus, this learning activity may require some explicit training or instruction on how to collaborate effectively. Swain, Brooks, and Tocalli-Beller's (2002) review of research on collaborative dialogue conclude that learners should be taught "both how and why to collaborate" (p. 81). For face-to-face collaboration, teachers may wish to demonstrate models of collaborative dialogue, as Kim and McDonough (2008) suggest. Training may be especially useful where technology is concerned, as students will need to learn how to use the technological tool as well as to learn how to act as a coherent group whose members offer each other mutual support. Training or instruction can take many forms, including a pre-task preparation period where learners can experiment with writing in the new environment (Mak & Coniam, 2008) or a list of guidelines for how to add to and edit the collaborative text (Lee, 2010).

In addition to providing guidance and facilitating discussion about collaborative writing, instructors should strive to help learners form collaborative (as opposed to dominant/dominant or dominant/passive) pairs or groups. This can be partially achieved by providing guidance (Fung, 2010) or showing good models of collaboration. It will also



require the teacher to monitor groups. If collaborative writing tasks are used regularly, the teacher should take an approach similar to Shehadeh (2011), who had learners switch partners every few weeks. This will ensure that no one becomes stuck in a non-collaborative pair or group for too long. Monitoring can also be done in online wiki tasks by reading the history pages of the wiki. If learners are not responsive to each other's comments, the instructor can use class time to stress why it is important that they read each other's feedback (and, if necessary, give advice on what types of feedback they should provide each other). Storch (2013) points out that groups must remain fixed for the duration of a wiki project (in the same way that a pair must remain fixed for an in-class collaborative writing assignment); however, learners can form new groups when they begin a new wiki project.

The above suggestions can help instructors make the most of collaborative writing activities while tailoring them to their learners' needs. One final suggestion is that collaborative activities be used in a sustained manner. Learners should, of course, have many opportunities to write individually. However, if learners are to benefit from collaborative writing tasks, engaging in these tasks on multiple occasions is likely to give learners the time and experience they need to become better collaborators and better writers.

## **DIRECTIONS FOR FUTURE RESEARCH**

The vast majority of studies on collaborative writing have covered the completion of one or two tasks. Shehadeh (2011) provides one of the only longitudinal studies on

collaborative writing in L2 contexts. The study's results are encouraging, indicating that collaboration over the course of a semester led to better vocabulary, organization, and content in learners' texts. Learners also reported that they became more comfortable with the activities as time went on. More longitudinal studies are needed to understand how collaborative writing works in SL and FL contexts with learners from a range of proficiency levels. Different task types can also be compared over time, e.g. language-focused tasks (such as dictoglosses) and meaning-focused tasks (such as jigsaws). Longitudinal studies involving the sustained use of wiki tasks over the course of a semester or a year may shed light on how learners' writing processes, engagement with each other's feedback, and text quality evolve over time.

Another area for research is the effect of group size on language learning. Fernández Dobao (2012) and Fernández Dobao and Blum (2013) have performed the only studies investigating the effects of group size on face-to-face collaborative writing, and their results are intriguing: larger groups produced and solved more LREs than pairs and individuals and also outperformed both pairs and individuals on measures of textual accuracy. Replication studies should be carried out in other language learning contexts. Similarly, studies on wiki-based collaborative writing should seek to determine if there is an optimal number of students for a writing group.

Studies should continue to investigate learners from a range of proficiency levels. As most studies have focused on learners who are at an intermediate level or above, further research in both face-to-face and online contexts should specifically target low-proficiency learners to establish whether they can successfully scaffold each other and how much of

their interaction they can conduct in the L2.

Outcomes of collaborative writing, such as evidence of language learning and learners' perceptions, should continue to be investigated in tandem with learners' behavior during the writing process, and connections between these should be investigated. These include the connections between LREs and language learning, or between wiki revisions and text quality. The factors that affect learner perceptions of collaborative writing also require further investigation. These may include task-related factors, but may also include affective factors such as self-confidence and students' images of themselves and their peers as language learners.

Finally, further research is required to determine the effects of collaboration on L2 writing development. Much of the research on face-to-face online collaboration focuses on oral interaction and the language learning it engenders. The link between collaborative writing and second language acquisition is intriguing and deserves further attention. In addition to this, however, future studies should continue in the vein of Storch (2005) and Shehadeh (2011) to investigate how collaborative writing helps L2 users become better writers. Studies involving the holistic assessment of texts with regard to such elements as content, organization, and task fulfillment (Williams, 2005) may shed light on the effects of peer-peer scaffolding on the development of L2 writing skills. Longitudinal studies will be valuable here to trace changes in writing skills over time.

Because collaborative writing involves oral or computer-mediated interaction, written output, and peer feedback, it can be seen as a fertile area for research existing at the intersection of L2 writing and second language acquisition. This research has the potential

to build a bridge between the two disciplines. In doing so, it can provide educators with options for fostering authentic peer-peer interaction, language learning, critical thinking, attention to textual qualities, and an understanding and appreciation of audience. Knowing when and how to employ these options will hopefully lead to more active, engaged, and autonomous L2 learners and L2 writers.

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