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Hybrid Language Teaching and Learning: Exploring Theoretical, Pedagogical and Curricular Issues

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Chapter 3

Theoretical and Empirical Foundations for Blended Language Learning

Senta Goertler

Blended and online learning are clearly on the rise (cf. Allen & Seaman, 2010) in general and appear to be on the rise in foreign language learning contexts as well. Blake (2011) pointed out that online course enrollment increased more than 10 times the increase in overall enrollment, thereby confirming an exploding trend in favor of online learning. Although the trend and the logistical benefits of blended and online learning due to the temporal and geographical flexibility are well known (cf. Blake, 2011; Goertler, 2011a; Kraemer, 2008a), less is known about blended and online learning and its foundation within second language acquisition (SLA) research and theory. This chapter argues that blended and online foreign language (FL) learning is not just a trend but that it also supports and reflects SLA theory and research.

This chapter focuses on the connection between SLA and blended learning. First, I will briefly review comparative research investigating the outcomes of face-to-face (F2F), blended, and online courses. The main part of the chapter focuses on the foundation of various computer-assisted language learning (CALL) formats within different SLA theoretical approaches. This section is introduced by a short review of commonly described SLA theories followed by a description of relevant CALL formats and concludes with a section outlining the connection between SLA theory and the CALL formats and their role in a blended language course. After discussing a theoretical basis for blended learning, I will quickly review what we know about SLA from research and describe its role in blended language classes. Finally, the chapter will conclude with recommendations for curricular design in a blended course.

What We Know So Far

As already mentioned, so far we know that blended and online learning is steadily increasing. Statistics, however, do not give any indication of how blended courses are designed and implemented. A blended or online course can take many different CALL formats and can be based on different teaching approaches or founded in different theoretical perspectives. Means, Toyama, Murphy, Bakia, and Jones (2009) define the following curriculum-related moderator variables as part of their presentation of research on blended and online learning: (1) pedagogy or learning experience (instructor-delivered expository or independent, active, or collaborative interactive), (2) computer-mediated communication (CMC) with the instructor (asynchronous only or asynchronous and synchronous), (3) CMC with

peers (asynchronous only or asynchronous and synchronous), (4) media features (text-based only or text and other media), (5) time on task (more online than F2F or more F2F than online), (6) one-way video or audio, (7) computer-based instruction elements, (8) opportunity for F2F time with the instructor (during instruction, before or after class, or not at all), (9) opportunity for F2F time with peers (during instruction, before or after class, or not at all), and (10) opportunity for practice and feedback provided (p. 29). These different materials and implementations necessarily influence how effective a course is and how effective the delivery format is (see also Blake, 2011). The choices made in response to these 10 variables also imply different theoretical stances and different assumptions about language learning. This chapter argues that a blended course can make sense from an SLA perspective if SLA theory and research is taken into consideration in response to these 10 variables and if SLA is integral to course design and implementation.

Research results on blended learning, regardless of implementation variables, have been positive. The U.S. Department of Education commissioned a meta-analysis of blended and online learning, which found that blended learning was the best learning environment followed by online learning (Means et al., 2009). This meta-analysis of 176 studies showed the same trend across fields and learner types. Grgurovic (2007) collected comparative studies on CALL in a database. She summarized the results related to specific skills (learned or taught) and the level of integration of the online materials. In a follow-up meta-analysis of 25 studies included in the database, Grgurovic, Chapelle, and Shelley (2007; as cited in Chapelle, 2010) concluded that blended and online learning yielded better results. Because meta-analyses came up with favorable results for blended and online learning, it is only logical to conclude that individual comparative studies show similar results for blended, online, and F2F language classes (Chenoweth, Ushida, & Murday, 2006; Goertler, 2011b; Sanders, 2006). It follows that studies focused on self-reported or measured improvement across one semester without a control group also discovered language development (Banados, 2006; Goertler, 2011b; Kraemer, 2008b; Madyarov, 2009; Strambi & Bouvet, 2003). Naturally, the success of the course depends on the design of the course as was mentioned earlier. Additionally, the kind of success that can be measured depends on the research design. Moreover, the instruments and the data analysis procedures also influence the results. Contradicting results as have been found when looking at specific skills (see summary in Goertler & Winke, 2008) can be explained by variability in course design, as mentioned earlier (Blake, 2011).

Another reason for variability in course effectiveness of blended and online FL learning is that online learning may involve different processes of learning and different outcomes compared with traditional F2F learning (Blake, 2009). Furthermore, as Garrett (1991) has implied and Sykes (2012) has argued, it may be time to let go of a comparative research methodology for understanding the learning process and outcomes in blended learning, at least from the perspective of SLA research and theory. Comparative studies may provide interesting information for administrators but are not actively contributing to SLA research, which is much more interested in how people learn in different contexts (see also Chapelle, 2010). Therefore, SLA theory and research needs to inform both the design of

blended courses as well as the research methods and research questions investigated in these learning contexts. To set the stage for such investigations, this chapter will now discuss the connection between SLA theory and research as it relates to the online components within a blended course.

Second Language Acquisition Theoretical Foundation for Various Computer-Assisted Language Learning Formats in Blended Courses

Computer-assisted language learning practitioners (cf. Chapelle, 1997) and researchers (cf. Blake, 2007; Chapelle, 2009) have long called for CALL research and material design to be theoretically grounded in SLA. Although not all theoretical assumptions and empirical results are applicable to a technology-enhanced language learning environment, CALL must turn to SLA theory and research to understand language learning processes and to apply that knowledge in materials and course design. Because of the differences between the F2F and CALL learning environments, White (2006) has argued for the development of a distinct theoretical framework specifically for online learning. Although I will return to such a proposal at the end of this chapter, the focus here is on what we already know from SLA theory and research and how it is relevant for blended courses.

In a blended language class, F2F learning activities may enhance and reinforce online learning activities and vice versa. It is crucially important that these two environments and the learning opportunities within them complement each other by being based on either the same SLA theoretical perspective or complementary SLA perspectives. Because most SLA textbooks provide insights into how to apply those theories to the F2F portions of the course, this chapter particularly focuses on the SLA theoretical foundation for the online components of a blended course.

Chapelle (2009) has argued that computer-mediated language instruction makes sense from any SLA theoretical perspective. Yet naturally, different kinds of computer-mediated language instruction implementations are better supported by some SLA theories than others. Since the birth of SLA theory, the field has expanded dramatically, and it is beyond the scope of this chapter to focus on all SLA theories. Instead, I will focus here on theories typically highlighted in review books and articles of SLA theory (see, for example, Gass & Selinker, 2008; and VanPatten & Williams, 2007a; for a discussion specific to CALL, see Chapelle, 2004, 2007, and 2009; Thorne & Smith, 2011; and Youngs, Ducate, & Arnold, 2011), including universal grammar, processability theory, interactionist perspectives, sociocultural theory, and language socialization (Table 3-1). Then I will describe different formats of CALL (Appendix 3-1) and provide information about which theoretical perspective is best suited for the format, keeping in mind that any blended or online course may use a variety of these formats (see also Blake, 2011; Kraemer, 2008a).

The formats of CALL discussed in this chapter are an expansion of Blakes's (2011) model, which separated CALL into tutorial CALL (traditional and

Table 3-1. Second Language Acquisition Theoretical Perspectives

Universal Grammar (White, 2003, 2007)	**Type of Approach: Linguistic**
Universal grammar assumes that everyone has the innate ability to learn languages. Universal grammar is the representation of all grammars of all languages. All languages are guided by the same principles but are differentiated based on the parameters of a language. When a child first hears a language, no parameters are set; upon processing the input, parameters will be set, and the language is learned. Perspectives differ as to the availability of UG during second language learning (see Gass & Selinker, 2008, for further discussion). A new process of learning might be necessary, parameters may need to be reset to account for the second language, or one may access the initial stage of the universal grammar to set a separate set of parameters for the second language.	
Processability (Pienemann, 1998, 2007)	**Type of Approach: Psycholinguistic**
The basic assumption of procesability theory is that language learning as a consequence of language comprehension and as evidenced in language production only occurs when the language processor is ready. This in turn means that there is an order in which aspects of the language can be processed. The theories assumes a processability hierarchy that dictates what can be processed when (i.e., what can be learned when).	
Interactionist Perspectives (Gass, 1997; Gass & Mackey, 2007)	**Type of Approach: Psycholinguistic**
This second language acquisition perspective is based on the assumption that interaction is key to learning. During interaction, input has to be processed to be comprehended input, which then may allow for noticing differences between the target language and the interlanguage rules. During output within interactions, learners can test the hypotheses they have formed about the second language. Whereas comprehended output can serve as positive feedback on the hypotheses, the negative feedback received during negotiation of meaning of incomprehensible output can lead to noticing of differences and subsequent adjustment to the interlanguage (i.e., learning).	
Sociocultural Theory (Lantolf, 2000; Lantolf & Thorne, 2007)	**Type of Approach: Social**
Sociocultural theory assumes that learning is collaborative, mediated, and situated. Language is one form of mediation between the human and the environment. The process of learning (including language learning) follows the pattern of being regulated by objects, regulated by others (typically more experienced), and eventually being self-regulated. At the point of self-regulation, something is learned or internalized; however, this is not a constant stage, and something internalized at some point in time may no longer be internalized later. Analyzing expert language and imitating it is a step in language learning. Another key concept in learning under sociocultural theory is the zone of proximal development, which is the distance between what a novice can do without assistance or scaffolding and what he or she can do with assistance. This is also the window in which language learning occurs.	
Language Socialization (Duff, 2007; Ochs, 2002)	**Type of Approach: Social**
For a novice to become a legitimate, accepted member of a community, the novice is socialized through language and at the same time socialized in how to use language. Socialization is further complicated in second language learning because of the already existing membership to one or several first language communities and the correlating first language identity.	

intelligent CALL [iCALL]), social computing (CMC), and games. For this chapter, a more fine-graded categorization was selected to highlight differences from SLA theoretical perspectives and in response to the 10 variables presented earlier. The categories are (a) CALL tutorials, (b) iCALL, (c) CMC with peers, (d) CMC across cultures, (e) online communities, (f) games, and (g) simulations. Yet this list of tools is not exhaustive, and more online tools could be used in a language class. Considering the space limitations of this chapter, other features such as using online content for authentic input, corpora, concordancers, online dictionaries, and other tools for analyzing language and trouble-shooting linguistic problems will not be discussed here (for a review on those topics, see Lafford, Lafford, & Sykes, 2007).

Introduction to Second Language Acquisition Theory

Before discussing how CALL elements of a hybrid course are supported by SLA theoretical perspectives, I will first summarize the main theories (see Table 3-1 for an overview). The theories can be divided into their approaches, which are typically related to the field of origin as well as how they define and account for where and how learning occurs. The theories were divided into the following categories: (a) linguistic (universal grammar), (b) cognitive and psycholinguistic (processability theory, interactionist perspective), or (c) social (sociocultural theory, language socialization) theories. The main difference between these approaches is whether they assume that language learning is an innate ability (e.g., universal grammar), part of general cognitive processing and psycholinguistic learning, or deeply embedded in social interactions. Table 3-1 indicates the type of approach for each perspective and summarizes its most salient features.

Formats of Computer-Assisted Language Learning

The CALL formats were divided into those that include a human-to-human interaction via the computer versus those that are an individual human-to-computer interaction. Naturally, simulations and games can span over both of these categories and are therefore included in their own category. The human-to-computer category was further divided based on the quality of feedback and strategies for material organization (i.e., tutorial CALL versus iCALL). The social technologies were grouped into three categories: CMC with peers, CMC across cultures, and online communities. The factors that differentiate social technologies are (a) the purpose of the communication and (b) the typical interlocutors. CMC with peers and CMC across cultures account for classroom activities only. During CMC with peers, students communicate with people at their language level, thereby limiting the opportunities to benefit from expert–novice interactions. In CMC across cultures, students communicate with people who are experts in the language and

typically also from another culture, thereby making expert–novice interactions possible but adding cultural differences as an added difficulty in the communication. Although these communications with peers and members of the target culture are also part of building online communities, the online communities in focus in the separate online communities category are focused on online communities that already exist outside of the class and that are organized around a theme or a task. The focus of communication in such online communities is on the content or tasks that these communities engage with rather than on a specific cultural or linguistic mission. Furthermore, members of these communities are typically from a variety of countries and cultures choosing one or multiple languages as their medium of communication. This different purpose, as well as the types of interlocutors, changes the integrateability of different theoretical perspectives.

Games and simulations share some commonalities with CALL tutorials and iCALL as well as with social media. Games and simulations as part of a blended language course are even more complicated to categorize and therefore were included in their own categories. A game or simulation may be focused on language learning or simply include speakers of another language; they may include only learners, members of the target community, or other multilingual participants or players. Simulations necessarily and games potentially include nonplayer characters or prerecorded interlocutors. These features make them a mixed category and heterogeneous in nature. The difference between the two is that simulations simply simulate a task or an interaction without an engagement with the actual task or real interlocutors.

In Appendix 3-1, I provide a definition of each CALL format, summarize the features of the format, list examples, and point out the best matching SLA theoretical perspective from the ones described above. However, in the following sections, I will explain how these formats are supported by SLA theory and what role they might play in a blended language learning environment. Chapelle (2009) also provides an informative overview of the connection between CALL and several of the theories mentioned here. Although there is some overlap between Chapelle's (2009) discussion and the discussion here, the former is limited to CALL in general and does not address blended learning specifically.

Computer-Assisted Language Learning Tutorials

Computer-assisted language learning practitioner tutorials are computer–human interaction based, are typically skill based, and provide feedback based on a limited answer key. As indicated earlier, this CALL format is most supported by universal grammar. A CALL tutorial provides learners with input, which can trigger parameter settings. Additionally, a CALL tutorial may highlight first language (L1) and second language (L2) contrasts to provide more practice on features that differ between the two languages to allow for adjustments to parameter settings in contrast to the L1. CALL tutorials are also considered effective from a behaviorist perspective because they provide instant feedback and by cognitive theories that support a development from declarative or explicit knowledge to procedural or implicit knowledge, suggesting that through repeated practice,

paths are strengthened or processes become automatized (see Gass & Selinker, 2008, for a more detailed discussion). Because no interaction with a human is part of these CALL formats, this is not considered helpful from those theoretical perspectives that assume the locus of learning in or through interactions such as the interactionist perspectives, sociocultural theory, and language socialization. For it to be beneficial from those perspectives, transfer from practice in controlled settings to natural conversations has to be possible. Considering these limitations from a social perspective on language learning, there are also implications for the role of CALL tutorials in a blended course. CALL tutorials would likely be part of homework or online class time as individual work reinforcing a concept learned in class. Given the technical limitations, such tools should primarily be used for controlled exercises with limited student production so that the program can provide accurate feedback. The teacher could facilitate the learning with these tools and maximize their benefits by assigning exercises that target a learner's weakness. A typical assignment would consist of completing a specific set of exercises, which some learners may complete quickly and for which others may need more time. The teacher can use the program internal reports to make decisions on what to review in class based on learners' successful completion of the exercises.

Intelligent Computer-Assisted Language Learning

Computer-assisted language learning practitioner tutorials and iCALL overlap, but iCALL has more capabilities. Because of the intelligent feedback and the computer-adaptive progression of materials, other theoretical frameworks in addition to the universal grammar apply as well. From a processability theory perspective, iCALL carries the advantage of being able to control the sequencing of materials. The learner, the teacher, and the program can select materials based on a learner's current capabilities and can thereby dynamically react to a learner's performance with new materials. As is the case with CALL tutorials, the lack of interaction causes problems from a social perspective on learning, although the availability of intelligent feedback allows for computer-aided scaffolding. Parser-based iCALL programs allow the software to score and provide feedback on even longer productions (Fryer & Carpenter, 2006). When such a program's feedback is based on previously (or concurrently) collected and coded learner corpora (see discussions in Blake, 2007; Pendar & Chapelle, 2008), the program can provide more accurate feedback. Presumably, the learners who produced the language in the learner corpus are at a similar developmental stage and would have similar problems as the learners engaging with the program, which should allow the current learners to receive scaffolding on the structures currently being processed. If the developer or designer also keeps in mind the processability hierarchy in his or her choice of amount and type of scaffolding depending on the error source, these programs can be even more effective. The application of these programs in a blended course is similar to CALL tutorials, but because of the more sophisticated nature of these programs, less teacher feedback and guidance are required during the implementation phase. A typical assignment in this type of program might be similar to CALL tutorials or require a set amount of time or

is dependent on when the student reaches a certain level. The advantage of the time limit is that each student must spend the same amount of time with the program. However, because of individual differences, such as language aptitude, students' results may differ radically. Program reports can be used by the teacher to develop individual learning paths and programs rather than following a one-size-fits-all approach.

Computer-Mediated Communication With Peers

Computer-mediated communication with peers indicates activities and tasks that require learner–learner interactions via computer technologies. CMC tools vary in the nature of the interactions. For example, a blog may be less conducive to a discussion than a discussion forum. However, the blog may be better suited for reflections than the discussion forum or a synchronous chat. CMC has typically been implemented and studied from an interactionist perspective. CMC, similar to other forms of interaction, allows for noticing, feedback, and negotiation of meaning and thereby enhances language learning (for discussions, see Blake, 2009; Kern, 2006; Sauro, 2009). Often, the medium slows down interactions among students compared with synchronous F2F discussion, which has been confirmed to result in more salience and thereby increasing opportunities for noticing and subsequent learning (see Ortega, 1997, for a summary). Additionally, as the work by Smith (Smith, 2003, 2008; Smith, Alvarez, Torres, & Zhao, 2008; Smith & Gorsuch, 2004) has shown, learners receive feedback not just from the interlocutor but also through scrolling and rereading portions of their own and the interlocutor's language production as well as through the consultation of other resources (e.g., online dictionaries, textbooks). The synchronicity of the medium influences the nature of the interactions, the type of feedback one receives, and students' ability to process the input. Some argue that interactions in CMC may take a different pattern from F2F interactions (see Fernandez-Garcia & Martinez-Arbelaiz, 2002; Smith et al., 2003).

Because of its social nature, peer interactions can also be seen as beneficial from a sociocultural theory and a language socialization perspective. Sociocultural theory, however, puts more of an emphasis on expert–novice interactions. From a language socialization standpoint, CMC with peers can be helpful but only in socializing learners to be part of a community of learners of the language. One may also argue that because learners are communicating with each other, their native-like input is limited and their primary input may be nontarget like, which may negatively impact their language learning. Because this form of CMC is limited to course members, it can be used during F2F or online time. It can therefore serve as a connection between the F2F and the online components of a course. The main purpose of CMC activities is to practice communication in a slowed-down format or when F2F is not an option. Payne and Whitney (2002) have argued that such interactions even when completed in text-based programs can improve communicative ability and oral proficiency. The teacher's role is to carefully design tasks that require and inspire communication and collaboration. The teacher can also provide feedback after reviewing the records of the interactions or an end product to be created during the CMC activity.

Computer-Mediated Communication Across Cultures

Naturally, this CALL format shares a lot of similarities with the previous format. The key difference is that these interactions occur between novices and experts. Because during CMC across cultures, the learners interact with an expert, these interactions are seen beneficial from the perspective of any theory that sees native-speaker input as an important trigger (e.g., universal grammar) or mechanism for learning. Similar to the above, CMC across cultures allows for input, pushed output, the negotiation of meaning, feedback, and noticing. It is thereby supported by interactionist perspectives on SLA. Most significantly, this form is supported by sociocultural theory because the learners are communicating with a native speaker (expert–novice interactions), and assuming the tasks are meaningful, scaffolding can occur and learners can move from being regulated by others (the native speaker) to self-regulation. From a language socialization standpoint, CMC across cultures also offers students the opportunity to be socialized into a cross-cultural community (for more, see the discussion on online communities and the work by Hanna & de Nooy, 2003). Because of the nature of the conversation with native speakers, there may also be limits to the effectiveness of these interactions. For instance, native speakers may not be able to adjust to the language learner, which means that the input is not comprehended by the learner. This, according to the interactionist perspective, as an example, can then undermine student learning. Arguing from a processability standpoint, the native speaker input may not be processed because of the learner's developmental stage and may therefore not result in learning. Furthermore, the challenge of navigating both a higher language proficiency as well as cultural differences may lead to an overloading of the working memory, and this may hinder the learning process. Additionally, from a practical standpoint, organizing such exchanges can be cumbersome and a logistical nightmare (see, for example, Belz, 2003). Typically, these interactions occur on students' own time in coordination with their partner(s). The teacher will organize the logistics and set up the exchange. The exchange may include other components as part of the class (e.g., reflective blogs, collaborative wikis). Some of these components may be part of the F2F time or additional online components. Previous research has made it clear that these communications are effective if learners are left alone but that they may lead to miscommunications, which need to be debriefed during F2F class time (see Belz, 2003). These debriefing sessions would best be done during class time in the privacy of the classroom and with instructor guidance.

Online Communities

Online communities heavily use CMC. Online communities relevant for blended courses are (a) the course itself, (b) already existing target-language communities, and (c) multilingual, transnational communities. Here the focus is on online communities consisting of members from around the world with a shared interest. Many of the advantages and cautions are mirrored in what was discussed under the previous two CALL formats. The interesting aspect about online communities, from a sociocultural theory perspective, is that the expert–novice role can be twofold in an online community. For example, a German tree worker may be an expert

on safety standards in the tree industry in Germany but not an expert in English. While exchanging ideas with an American tree worker, the German tree worker is an expert on the topic but is a novice for the language. Thus, the two interlocutors can scaffold each other in different ways. Online communities are especially supported by and interesting from a language socialization perspective on language learning. Because online communities based on shared interests are mostly not defined by national borders, the status of one's L1 does not limit access in transnational communities (see Friedman, 2010). Online communities are communities of practice and learners can be socialized into these communities (see also discussion by Thorne, Black, & Sykes, 2009). Online communities may also serve as a transitional place for more traditionally defined target communities (see, for example, Lam, 2004). From a blended course perspective, three types of online communities are relevant: (a) the class itself, (b) a transnational or cross-cultural online community, and (c) target-language or target-community online communities. It is important in online and blended classes that a sense of community is established within the course using the F2F time as well as online platforms. Connecting learners with online communities that include language users of the language being studied can enhance the possibility of lifelong learning and lifelong use of the language. The teacher's role is to set up community platforms for the course, introduce existing online communities, be an active member in the class community, and strategize and debrief with students on how to become a legitimate member of online communities. When using already existing communities, the teacher can guide learners through analyses of interactions to help them become more accepted members of those communities and thereby have more opportunities for language learning.

Online Gaming

Because online gaming can include so many different formats, its theoretical foundation varies according to the game type. The place-based mobile game *Mentira* (Sykes, 2010), for example, includes peer-to-peer interactions as students work together to clear their name and understand the game, interactions with the game itself in an attempt to receive good clues, and interactions with members of the community in the neighborhood in which the murder mystery takes place. In all three interaction realms, learners receive feedback and input and have to produce output. Other games may be less interactive but still include feedback.

The big advantages from the SLA perspective for gaming in general are the individualized feedback and individualized paths (as discussed under iCALL); the opportunity for real, simulated, or rehearsed interactions (see discussion on CMC); and the incidental focus on language learning. A counter-argument can also be made from a cognitive perspective that the game playing itself demands so much cognitive processing that none is left for language learning. Overall, however, games show great potential for language learning, especially in online and blended environments, yet the astronomical development costs make them almost impossible to implement at this time (Blake, 2011). Designing effective games requires skills that language teachers do not have (e.g., programming, graphic design, game theory), and additionally, this process requires financial resources that are typically not available to language programs. Hence, although

games offer great benefits to language learning and are a wonderful addition to a blended language learning class, they are unrealistic in almost all contexts at this point. If commercially available, a game could form a connection between the classroom and online activities by creating a transition between the two.

Simulations

Simulations are somewhat problematic in their relation to SLA theory because they are often simulations of interactions without being real interactions. Furthermore, these simulations do not always include feedback. For simulations to be beneficial, transfer has to be possible from the practiced simulated interactions to real-life interactions (see Sydorenko, 2011, for further discussion). Yet in a blended classroom, simulations play an important role because the decrease in F2F class time means students have less time to interact with other students. Hence, simulations are an effective way to allow for practice of responding to different prompts as preparation for actual conversations during class time and beyond.

Blended Courses and Second Language Acquisition Theory

To summarize, a comprehensive online course that uses a variety of CALL features has the potential of being based on and supported by a variety of SLA theories. What may be seen effective from one SLA perspective may not be seen as effective from a different theoretical perspective. For example, although participating in iCALL tutorials may be seen as beneficial from a processing theory perspective, these activities are not seen as beneficial from an interactionist perspective because they do not involve human-to-human interaction even though the programs do offer immediate and intelligent feedback. Moreover, an online component not only has to be supported by SLA theory and best pedagogical practices (including articulation with the F2F components), but also has to be logistically feasible. Although iCALL tutorials that provide intelligent parser-based feedback created from a coded learner language production corpus are preferred over scoring based on a simple limited answer key, it does not mean that they are readily available for every program and every language. High costs are involved in developing such systems, and likely only commonly taught languages will have access to such tools. Likewise, engaging games with three-dimensional graphics and a plethora of tasks, feedback, and opportunities for failure are extremely expensive to create and are at this point outside of the budgetary possibilities of language programs (see also Blake, 2011). These words of caution should not stop blended learning teachers and course developers from attempting to approximate these most ideal tools.

Observations from Second Language Acquisition Research and Their Implication for Blended Courses

After reviewing SLA theories, CALL formats, and the SLA theoretical foundation for different CALL types in blended language classes, I now turn to confirmed observations about SLA and how they can be addressed in blended language classes.

The focus in this section is on the 10 observations—things we know about SLA—identified by VanPatten and Williams (2007a, 2007b).

VanPatten and Williams (2007b) outlined 10 observations from SLA that any SLA theory needs to be able to explain (for a discussion on how the theories mentioned above address these observations, see Ortega, 2007; VanPatten & Williams, 2007a):

> (1) Exposure to input is necessary for SLA. (2) A good deal of SLA happens incidentally. (3) Learners come to know more than what they have been exposed to in the input. (4) Learner's output (speech) often follows predictable paths with predictable stages in the acquisition of a given structure. (5) Second language learning is variable in outcome. (6). Second language learning is variable across linguistics subsystems. (7) There are limits on the effects of frequency on SLA. (8) There are limits on the effect of a learner's first language on SLA. (9) There are limits on the effects of instruction on SLA. (10) There are limits on the effects of output (learner production) on language acquisition" (pp. 9–12).

Observation 1

Online and blended learning increase the opportunity for and the variety of input (observation 1), which is necessary for language learning. Additionally, digital tools make it possible to enhance and modify the input either before exposure (by developers or teachers) or during exposure (by the learner). At the same time, F2F oral input is more limited, and learners have the opportunity to ignore vast portions of the input from the online resources (for a summary of studies on learner online behavior, see Fischer, 2007). In a blended learning environment, input can include enhanced and digitally annotated input and slowed-down input in CMC during the online portion as well as the oral modified input from an expert speaker enhanced by gestures and facial expressions with room for negotiation of meaning in the F2F portion of the class.

Observation 2

Because language learning can occur incidentally (observation 2), making available a varied source of language input and language learning opportunities increases the chances of such incidental SLA. A blended course can simply make more resources available than a course that does not include online portions or does not include F2F components. Yet it all depends on what the learners do with the input and how they are encouraged to interact with the materials.

Observation 3

As pointed out earlier, learners learn more than what they are exposed to in their input (observation 3). In online portions of language courses, patterns can be highlighted and students can be led to self-discover structures and lexical items through the use of language corpora and analytical work with language corpora and concordancers to experiment with language and analyze the input they receive.

Observations 4 to 6

VanPatten and Williams's fourth point is that learners move through the acquisition process in a somewhat predictable order. This can, as pointed out in early sections and in Chapelle's (2009) discussion of the relationship between CALL and SLA, form the basis of sequencing and feedback in blended and online courses, and because of the asynchronous nature of the courses, students can be guided to navigate through these sequences at varying speeds (see also the earlier discussion on iCALL). This flexibility in practice and presentation of materials also supports the next two points: the variable outcome (observation 5) and the variability across linguistic subsets (observation 6). In the online portion of blended courses, students can be encouraged to move through the materials in an individualized fashion that addresses their particular aptitude for language learning and their strengths and weaknesses in the linguistic subsets of their current language proficiency. Then class time can be used for a more systematic presentation of content and for practice of language structures and skills.

Observations 7 to 10

VanPatten and Williams's last four points put into perspective the previous points by pointing out the limited effects of frequency (observation 7), L1 (observation 8), instruction (observation 9), and output (observation 10). These points, on the one hand, mean that no matter how great the course design and the course delivery, learners may still not succeed. On the other hand, it also implies that frequency and instruction can have a positive effect. The repetition that the online medium offers can play an important role but is not a guarantee. Instructional and practice materials can be replayed as many times as a learner would like in a blended course. This is a crucial advantage of online versus F2F presentation of materials. Because the effect of instruction is limited (observation 9), more time can be spent on practice modules with extensive feedback, which of course seems more natural to an independent course delivery such as an online course than an F2F course. In online components of a course, the speed of communication can also be slowed down, thereby making the processes involved in interaction and output more salient, which may increase the positive effects of output, as has been suggested by CMC research (see previous discussion on CMC).

In conclusion, blended learning may have some inherent advantages that can facilitate student learning. Blended learning courses may especially help motivate students, and students can gain greater language proficiency through a well-designed blended course compared with a well-designed F2F course or a well-designed online course. As pointed out at the beginning of the chapter, this has been confirmed by research.

Recommendations for Curricular Design and Research Methodology

To reiterate, from the discussion of SLA theory and SLA observation and their relation to blended language learning, a combination of CALL formats is beneficial. Different CALL formats work better depending on the SLA theory. Similarly,

different CALL formats can address different necessary components of successful language learning. Of particular interest is a combination of iCALL tools and CMC that includes online communities and gaming (see also Blake, 2011). Well-designed iCALL tools and games make it possible for a learner to go through the material at his or her own pace and following his or her own path while receiving valuable, detailed, individualized, and targeted feedback. The online communities and other CMC environments would allow for input, output, negotiation of meaning, and identity formation in an FL, a crucial part for any social perspective on language learning. Therefore, a well-designed online and blended course should include a variety of these tools (see also Kern, 2006, for a discussion of different roles tools play). Goertler (2011a) provides more information about general curricular recommendations for online and blended learning. General principles of curricular design and innovation apply here as well such as the needs and goals of the stakeholders, available resources, articulation within the course and beyond, assessment of learning outcomes and curricular innovation, and the willingness to engage in a long-term iterative process (see also suggestions by Barrette, 2008; Means et al., 2009; Pelz, 2004; White, 2006).

Following are some concrete recommendations for blended instruction derived from SLA theory and based on current knowledge of SLA processes:

- Conduct a needs analysis to determine language level, developmental stage, and computer literacy skills;
- Design materials and tasks for both online and F2F environment that address realistic learning goals and are based on SLA theory;
- Build into the course data collection and data analysis procedures, so that you can continuously conduct formal and informal evaluations of the course using both qualitative and quantitative data and research methods;
- Prepare yourself for an iterative curricular design process because technological advancements and the information from the research on previous iterations will influence subsequent iterations of a course;
- Use the increased input and especially enhanced input options;
- Provide opportunities for various interaction opportunities, including (a) audio, video, text based, and F2F; (b) asynchronous and synchronous; (c) simulated or real; (d) with a variety of interlocutors such as peers, teacher, and other language speakers from a variety of communities;
- Whenever possible, use individualized programs that are adaptive to learners' performance;
- Whenever possible, use reports and analysis tools to improve teaching materials and learning tasks and to adjust to learners' developmental stages;
- Offer a range of practice opportunities, both skill and structure-based as well as communicative tasks in both online as well as F2F environments;
- Teach and provide assistance with technology tools to avoid cognitive overloading caused by technological difficulties;

- Include a variety of media to address multiple learning styles;
- Facilitate learning by teaching learners effective strategies to navigate both F2F and online class tasks;
- Whenever possible, provide immediate feedback through interlocutors or the computer or the materials;
- Make sure that the teacher and learner roles are consistent in both the online and the F2F component of the class.

Conclusions

In conclusion, blended and online learning offers potential benefits for language learning and has been found beneficial for language learning. Unfortunately, hybridization of the curriculum is often driven by logistical concerns rather than by a focus on improving the language learning process. In this chapter, I have argued that blended learning can be and should be based on SLA theory and research.

Yet curriculum development does not happen in an institutional vacuum and is constrained by logistical and monetary concerns. As has been alluded to before, unfortunately, the best tools are the most cumbersome and expensive to develop and may never make it into mainstream language instruction, especially in smaller languages. Moreover, the logistical considerations may override some of the pedagogical motivations. For example, although it is considered beneficial from an interactionist perspective on SLA to include interactions in the online as well as the F2F portion of the course, the design variables given by an administrator might not allow for such interaction. The course may have only one assigned instructor for multiple sections with the support of graders as a cost-saving mechanism. Given those circumstances, it would be unrealistic to have communicative tasks during F2F class time. Likewise, if the majority of the students do not have access to high-speed Internet, many of the CMC tools will not work sufficiently fast to be effective for language learning and practice. Hence, one must find a balance between following best practices derived from SLA research and SLA theory while also working within the institutional constraints.

One also has to keep in mind and continuously inform all stakeholders that a blended or online course cannot be the same as a traditional course and therefore cannot have the same results. This is not a judgment of better or worse results, but simply going through the language learning process a different way and engaging in different language use will result in different language abilities. This, of course, poses a problem in places where a course is offered in online, blended, and F2F delivery formats.

I will close this chapter by pondering on SLA in the 21st century. As social media and massively multiplayer games steadily increase in popularity, the likelihood that students will engage in language practice through these media may be much greater than the likelihood that they will use an FL on a daily basis in any other format. If that is the case, then do we, as language educators, need to adjust our curricular goals for the students? Moreover, as technology-enhanced, blended, and online learning courses increase and more learners have participated in them, will

that change the learning culture and even the learning processes? How will those changes impact language learning processes? I close this chapter with the argument that SLA researchers need to learn more about language use, practice, and learning in online communities inside and outside the classroom in order to broaden SLA theories to account for a variety of language learning and language use settings.

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Appendix 3-1. Computer-Assisted Language Learning Formats

Name	Definition	Features	Example	SLA Theory
Tutorial CALL (see also Blake, 2011)	A computer program with skill-based exercises that provides immediate feedback based on a preprogrammed answer key	• Individual interaction with the computer; no human-to-human interaction • Typically a focus on grammar or vocabulary (i.e., skill-based exercises) • Typically exercises with limited answer options • Typically self-grading and providing immediate feedback • Sometimes with explanations of errors or correct answers or indication of location of errors • Sometimes includes access to glosses and grammar explanations • Typically produces records for the teacher (correct and incorrect answers; number of attempts; whole class overall performance)	*Quia* workbooks	Universal grammar
iCALL (see work by Heift, 2010, and Nagata, 2002)	A computer program with skill-based exercises that provides immediate intelligent feedback. Feedback is based on previously coded errors often based on a learner corpus; the feedback is parser based and can therefore provide feedback even on longer productions	• All features mentioned above • Feedback can be based on previously coded learner corpus and be parser based • Feedback could be enhanced by speech recognition software • Students may be guided through the program based on an initial placement test and performance on subsequent lessons • May include more nuanced feedback • May include different scaffolding elements to assist learners in developing a more native-like response • Typically provides more detailed records to the teacher (correct and incorrect answers; time in the program; number of attempts needed; scores on tests; progression through the program)	*E-tutor* (see Heift, 2002, 2005, 2010) *Tell Me More* (see Blake, 2011)	Processability theory

Name	Definition	Features	Example	SLA Theory
CMC with peers (for overview, see Kern, 2006)	A computer medium that allows for synchronous or asynchronous communication via text, audio, or video with other learners	• Communication among peers using computer technologies (which can include mobile devices) • Learners can engage in different kinds of tasks depending on the tool (e.g., reflecting via a blog, completing jigsaws or a role-play via a chat, discussing topics in a chat or discussion forum) • Learners can be engaged in asynchronous CMC (e.g., discussion forum, blog, email) or synchronous CMC (e.g., Skype, chat) • Some tools keep a record of the communication others do not • Collaborative tasks can also be integrated by using additional tools such as wikis • Students can also be asked to share their work and provide each other with feedback via CMC tools	Tools such as discussion forums, chat, email, *Skype*, and *Facetime* used for learning in peer–peer interactions	Interactionist perspectives
CMC across cultures (Belz, 2003; Belz & Thorne, 2006; Thorne, 2003)	A computer medium that allows for synchronous or asynchronous communication via text, audio, or video with native speakers	• Same as above with the important difference that interactions are with a native speaker from a target language community • Typically, these communications are organized by the teacher and involve L1 class–L2 class or student—native speaker partnerships • Sometimes the partners have to work together for common goals or discuss specific topics; other times the partnership is more loosely defined • Typically, these exchanges are integrated into the class and reflected upon during class	Tools such as above used for cross-cultural exchanges; see, for example, *Cultura* (Furstenberg, Levet, English, & Maillet, 2001) project	Sociocultural theory

(*continued*)

Name	Definition	Features	Example	SLA Theory
Online Communities (see also Thorne, Black, & Sykes, 2009; and work by Hanna & de Nooy, 2003)	A group of people who share a common interest and typically are remote from each other who use CMC technology to form an online community on an online platform or in a virtual world	• A community of people using an online platform to communicate, share, and update each other; this could be limited to the class, include the class, or be independent of the class • Some of these platforms may include elements of CMC mentioned above or gaming as mentioned below	For learners: *English, baby!* Online groups by interest: http://www.treebuzz.com/ Virtual worlds: *Second life* Social media: *Facebook, Google+*	Language Socialization
Gaming (Sykes & Reinhardt, forthcoming)	A digital game that is task based and designed for semistructured play involving problem-solving, negotiation, feedback, and the freedom to fail	• Games can be mechanical or interactive • Games engage learners in tasks for the purpose of completing short- and long-term goals within the games; every player move receives feedback by either advancing or not in the game; failed attempts can result in learning • Games can be played individually, against other players, or collaboratively against other teams • In the language classroom, two categories of games are relevant: games designed with a language-learning focus such as Julie Sykes' *Mentira* (Sykes, 2010) and games that are played globally in multiple languages with transnational and translingual interactions such as *World of Warcraft* • Games may be played stationary (e.g., *Wii*) or mobile (e.g., *Mentira*) • Games may use real identities, avatars, or pseudonyms	*World of Warcraft* *Words with Friends* *Mentira*	Mixed

Name	Definition	Features	Example	SLA Theory
Simulation	An online platform that simulates real interactions with the language or culture being studied	• These environments could be simple as the *Conversations* program developed by the *Center for Language Education and Research*, in which one can create simulated conversations by recording multiple connected prompts for a learner to respond to • More complex environments allow learners to navigate a three-dimensional environment in which they have to complete tasks with NPCs; they may have several answers available to select from, and the response from the NPC will depend on the selected response	*Conversations* *Croquelandia*	Mixed

CALL, computer-assisted language learning; CMC, computer-mediated communication; L1, first language; L2, second language; NPC, nonplayer character; SLA, second language acquisition.