CHAPTER 2

CHAPTER 2
Landscapes for Learning: Conceptual and Historical Framework

Changes in theories of learning affect uses of technology, but new technologies also make new kinds of interactions possible and hence affect theories of learning. (Cognition Technology Group at Vanderbilt, 1996)

2.1 Introduction

Through an analysis and synthesis of the literature, this chapter will provide a summary of the evolution of teaching methods and use of technology in FSFL from the end of the 19th century until the end of the 20th century with a vision for teaching and learning FSFL in the 21st century. The summary of the evolution of technology in the teaching of FSFL will illustrate the integral role which OLEs play in the vision. Both summaries focus on understanding and analyzing the influence of learning theories on the evolution. The summary is by no means exhaustive; rather it aims to highlight the prominent trends and ideas which marked specific periods and which allow us to trace the evolution. The second research question considered in this study asks what the beliefs reflect in terms of the evolution of approaches and use of technology in the teaching of FSFL. The historical and conceptual framework provided in this chapter will assist in understanding, interpreting and analyzing the research findings in order to explore answers to this question.

2.2 The Evolution of Second- and Foreign- Language Teaching

2.2.1 Introduction

In his treatment of the historical developments in language pedagogy, Stern (1992, p.6) isolates three ways in which language pedagogy has aimed to renew and improve itself:

1. Innovation through change in teaching methods;
2. Innovation through language-related sciences and research;
3. Technological innovation.

Stern's perspective is a useful one for the purposes of this review since it encompasses both the evolution of language methods, theory and the use of technology. Any discussion of the evolution of methods in language pedagogy will, by necessity, incorporate a discussion of linguistic and learning theory. While changes in methods reflected to a large degree social, economic, political, or educational circumstances, they were also significantly impacted on by changes in language theories and in new psychological perspectives on language learning (Stern, 1983). The use of technology in language learning has evolved somewhat, although not entirely

independent of linguistic and learning theory. For the purposes of this review it will be more practical to provide a separate discussion of the evolution of technology use in second- and foreign- language teaching.

The evolution of second- and foreign- language teaching has been clearly chronicled and delineated by researchers and theorists and has been largely discussed and debated in a "methods' framework. Stern (1983) describes a method as a "theory of language teaching" or school of thought resulting "from practical and theoretical discussions in a given historical context" (p. 452). Although new methods or approaches signify a certain 'break from the old', they nonetheless maintain a link with the past by incorporating positive aspects of previous paradigms (Brown, 1980). It is not surprising then, that as Stern (1992) observed, "one of the main features of the development of language pedagogy has been the continuous attempt to renew language teaching through changes in teaching method" (p. 6). These attempts at renewal begin essentially during the final decades of the 19th century at which time the Grammar-Translation Method came under fire.

2.2.2 The 19th Century

During the nineteenth century, the Grammar-Translation Method with its emphasis on the transmission of structural rules and analysis of form (Brown, 1980) served as the principal method of teaching modern and classical languages in schools. As the name suggests, the characterizing feature of the method was its emphasis on translation into and from the target language. The goal of studying a foreign language was to learn the language so as to be able to read its literature. Grammar was taught deductively with the student's native language being the medium of instruction and with a strong emphasis on accuracy (Richards Rodgers, 1986). Little emphasis on speaking or listening to the language was encouraged. Instead, the "book-oriented method" reflected an intellectual activity of mental discipline involving reading and memorization of rules and facts (Stern, 1983). Brown (1980) argues that the theoretical underpinnings of the method were more pedagogical than linguistic or psychological with limited time and resources in schools favouring such an approach. Richards and Rodgers (1986) noted that it was a method without theory or without any literature which might offer a rationale or justification for it. Not surprising then, the Grammar-Translation Method had a negative reputation in the annals of language teaching:

> In the final decades of the nineteenth century, grammar translation was attacked as a cold and lifeless approach to language teaching, and it was blamed for the failure of foreign language teaching. The majority of language teaching reforms in the late nineteenth century and throughout the first half of the twentieth developed in opposition to grammar-translation. (Stern, 1983, p. 454)

2.2.3 The Early 20th Century

A reform movement at the turn of the century resulted in the development of principles of foreign-language teaching which provided the theoretical foundation for a principled approach to the study of language teaching and learning. The interest in developing principles grew out of

naturalistic principles of first-language acquisition and reflected the beginnings of the discipline of applied linguistics (Richards Rodgers, 1986). The principles emphasized the importance of listening and speaking the foreign language. Meaningful contexts for learning, inductive teaching of grammar and avoidance of translation were some of the principles put forth (Ibid.). These principles provided the foundation for the Direct Method. The new method which emphasized communication in the target language arose out of the need for more effective language learning "in a new world of industry and international trade and travel" (Stern, 1983, p.456).

While the method enjoyed popularity in Europe in the early part of the century, it proved less effective in public education in North America where opportunities for oral practice and native-speaking teachers were less common. An American study begun in 1923 in the U.S. concluded that teaching conversation skills was impractical given time restrictions in schools and given the perceived irrelevance of foreign conversation skills in the U.S. (Richards Rodgers, 1986). The results of the study, published as The Coleman Report (Coleman, 1929) advocated a reading approach to foreign-language learning. Comprehension of texts from books with short reading passages with vocabulary lists, silent reading and discussion of the passage in English served as the basis for the approach (Darian, 1972).

During World War II, the need for soldiers to become orally proficient in the language of their enemies and allies refocused once again the efforts on oral skills. Since conversational proficiency was not the goal of foreign-language courses in the U.S., a new approach or training program was necessary. Thus the Army Specialized Training Program or "Army Method" was developed. The method, however, did not rely on a specific theoretical base:

> The "methodology" of the Army Method, like the direct method, derived from the intensity of contact with the target language rather than from any well-developed methodological basis. It was a program innovative mainly in terms of the procedures used and the intensity of teaching rather than in terms of its underlying theory. (Richards Rodgers, 1986, p.45)

2.2.4 The Middle of the 20th Century

The launching of the first Russian satellite in 1957 resulted in an increased interest in and funding for foreign-language study in the United States. Language teaching specialists began developing a method that would be suitable for U.S. colleges and classrooms. They drew on the Army Method, structural linguistic theory and behavioural psychology to develop what was termed "the Audio-lingual Method" (Richards Rodgers, 1986). Brown (1980) describes how prominent theories in linguistics and psychology influenced practice at that time:

> Around the middle of the century the unique advances of both linguistics and psychology had a profound and lasting effect on language teaching methodology. Structural linguistics had provided tools for dissecting language into its smallest parts and for contrasting two languages "scientifically", and behavioral psychology had provided a model for teaching virtually any behavior by operant conditioning. The two theoretical

> stances merged perfectly to give language teachers a method firmly grounded in theory: the Audio-lingual Method (ALM). (p.242)

Behavioral psychologist B.F. Skinner published his influential book *Verbal Behavior* in 1957 in which he elaborated a theory of learning applicable to language learning. Skinner's elements of stimulus, response and reinforcement were easily adapted to language learning:

> A set of phrases or sentences is given to which the learner has to make the same response, or on which he has to perform the same manipulation ... the student is encouraged to produce repetitively a suitable sound in his own language and is rewarded each time there is a phonetic variation in the direction of the foreign language sound until gradually only productions of the new sounds are rewarded. (McDonough, 1981, pp. 14-15)

The new method, founded on both behavioral psychology and structural linguistics emphasized habit formation, repetitive drills, avoidance of errors, mimicry and memorization (Stern, 1983) and depended on a central and active role for the teacher (Richards Rodgers, 1986). Given that an important tenet of structural linguistics is that the primary medium of a language is oral (Ibid.), oral proficiency, and not the study of grammar or literature, was the primary goal with the method. Reading and writing were introduced only after students practiced the structures orally. The tightly-structured approach of the dialogues and drills attempted to minimize the potential for errors. The learner was not encouraged to initiate interaction because it might result in a mistake. Lack of understanding of meaning was less important than the ability to effectively imitate, memorize and respond to model dialogues; therefore, grammatical explanation was minimized (Brooks, 1964).

The behavioural view of both language and language learning dominated foreign- language teaching methodology for several decades resulting in classroom emphasis of controlled practice with careful reinforcement (Brown, 1980). However, by the end of the sixties, Audio-Lingualism had become what Stern refers to as "the whipping boy for all that was wrong with language teaching" (p. 465). Not only did practical results of the approach fall short of expectations, but changes in linguistic theory in the 1960's challenged the structural view of language as well as the behaviourist view of language learning. Chomsky's (1959) theory of transformational grammar argued that language was not a process of habit formation. According to Chomsky (1966), innovation and the formation of new sentences and patterns allow for the generation or creation of new utterances from the learner's underlying knowledge of abstract rules. Chomsky's references to "innate aspects of the mind" contrasted and conflicted with Skinner's emphasis on observable behaviours. "Suddenly the whole audio-lingual paradigm was called into question: pattern practice, drilling, memorization" (Richards Rodgers, 1986, p.60). The dissatisfaction with the Audio-Lingual Method was one of a number of factors that would set the stage for yet another shift in approaches to the teaching of second and foreign languages.

2.2.5 The Seventies and Eighties

Towards the end of the sixties and early in the seventies, the general abstract, structural view of language was replaced instead by a semantic and social emphasis in language (Stern, 1992). The

growth of psycho-linguistics, socio-linguistics and an interest in semantics had important implications for the teaching of languages in that they highlighted the importance of real-world language use. During the early seventies, work by the American sociologist Hymes resulted in the concept of communicative competence. Hymes (1968) argued that a sentence must not only be grammatically correct or competent, but that it must also be appropriate in relation to the context in which it is used. He openly criticized Chomsky's emphasis on linguistic competence by arguing that it "posits ideal objects in abstraction from socio-cultural features that might enter into their description" (p.7). Hymes' theory attempted to define what an individual needs to know in order to be communicatively competent in a speech community.

The humanistic emphasis in pedagogy that occurred in the United States during the 1970's encouraged more individualization of instruction and more group work. The introduction and growth of French-Immersion programs in Canada during the seventies and eighties focused pedagogical attention on the importance of meaning and communication in second-language learning. Alternate methods such as the Silent Way, Suggestopaedia, and Community Language Learning received receptive responses in the seventies and focused attention away from the pattern and drill approach and towards communication. The emphasis in the French-Immersion classroom on non-language content and on real communication as well as the perceived success of the approach no doubt raised awareness of the importance in language learning of meaningful communicative interaction, purposive behavior, authentic language and negotiation of social meaning.

An "explosion of research on second language" in the seventies recognized the importance of the individual's construction of language thus raising questions about the role played in language learning by the learner's motivations, perceptions and initiative (Stern, 1992). Research in language learning, particularly that which contrasted first and second-language learning, led to a search for new methods. The work of the American applied linguist Krashen (1978) and his distinction between acquisition versus learning provided a theoretical foundation from which to understand the important role of communication in second-language learning. According to Krashen, second-language acquisition is analogous to the way in which a child would acquire his/her first language. The concept implies that languages can be learned effectively without formal study of structure and form.

From these changes grew a new approach to language teaching in the seventies termed the Communicative Approach or Communicative Language Teaching (CLT). Finnocchario and Brumfit, (1983) have compared the Audio-Lingual Method and Communicative Language Teaching by contrasting their characteristics as follows:

Table 2.1 Comparison of the Audio Lingual Method and Communicative Language Teaching

Audio-Lingual Method	Communicative Language Teaching
Lang. learning involves structures	Lang. learning involves communicating
Emphasis on structure and form	Emphasis on meaning
Aim is linguistic competence	Aim is communicative competence
Errors must be prevented at all costs	Errors are part of language learning
Teachers must specify what language the student will use	Teachers cannot know what language the student will use
Students must interact with the language	Students must interact with people
Accuracy is a primary goal	Fluency is a primary goal
Language is habit	Language is creation
Teachers control the learners	Teachers assist the learner

Richards and Rodgers (1986) described other significant characteristics of this new approach including its emphasis on the use of authentic, "from life" materials and language-based realia such as magazines, newspapers and graphic and visual sources around which communicative activities might be constructed. In terms of the type of communicative activities in which students might engage, the authors include role plays, simulations as well as a variety of games. A tolerance for errors means that learners are not being constantly corrected. Instead, errors are seen as a normal phenomenon in the communicative process (Littlewood, 1981). Interaction is an important feature of the communicative classroom. Through grouping, pairing, and cooperative relationships, students have the opportunity to express their own individuality (Ibid.).

In relation to the respective roles of teacher and student, Richards and Rodgers (1986) argue that Communicative Language Teaching "often requires teachers to acquire less teacher-centred classroom management skills" (p.78). Teachers are responsible for responding to and for monitoring and encouraging the language learner's needs. Their role is to organize the classroom as a setting for communication. Their role is not error suppression and correction but that of a teacher-counselor who exemplifies an effective communicator (Richards Rodgers, 1986).

Littlewood (1981) describes the role of the teacher in CLT as that of a "facilitator of learning", a consultant, advisor, coordinator of activities, classroom manager, co-communicator, "human among humans" who "steps out of his didactic role" (p. 94).

Communicative Language Teaching with its emphasis on meaning and communication and its learner-centred approach has served as the dominant approach to language teaching since the demise of the Audio-Lingual Method. Many language teaching methodologists subscribe more or less consciously to one or other aspects of communicative teaching (Stern, 1992). The approach incorporates many of the characteristics of the other methods which preceded it while at the same time managing to avoid the "narrowness and dogmatism of the method concept" (Ibid.). As a result, it has the potential of making a more lasting contribution to language teaching than the Direct Method, Grammar-Translation or the Audio-Lingual Method.

Yet, despite the apparent popularity of CLT and, despite its being an improvement over preceding innovations, it cannot be seen as a panacea for the problems that have been faced by language teachers. Stern (1992) explains:

> As for the communicative approach, the reliance on a single overriding concept, 'communication', is a disadvantage which prevents communicative language teaching from being entirely satisfactory as a theoretical framework. In order to account for all varieties and aspects of language teaching we either stretch the concept of communication so much that it loses any distinctive meaning, or we accept its limitations and then find ourselves in the predicament of the 'method' solution: an excessive emphasis on a single concept (p. 14).

Stern thus dismisses CLT as a suitable theoretical framework for the teaching of a second language. Yet no other approach, method or framework has evolved to replace it. Must we assume that CLT represents the final stage in the process of evolution of language teaching? If past trends are an indication of present and future possibilities, then we must assume that practices will continue to evolve as they have always done. Past evolutions have reflected the social, economic, political, or educational circumstances as well as the language theories and psychological perspectives on language learning of the period. How might the conditions of the 21st century impact on the approach to language teaching? What factors or conditions are most likely to influence approaches? What theories of psychology and of learning are most significant for learning in the 21st century and are thus significant in terms of the evolution of second language learning? What social, economic or educational practices might influence the evolution? The following sections of this chapter aim to consider these questions and to predict the future evolution of approaches to the teaching and learning FSFL.

2.2.6 A New Era of Language Learning

Many educators, researchers and writers have already begun to evolve visions for learning in the 21st century while those interested in language learning are beginning to describe a new era of language learning. In terms of learning in general, Henchey et al. (1996) have outlined a vision which is based on the views of organizations, scholars and research centres from around the

North American continent and proposes to take all learners into the 21st century. The vision is articulated in stark contrast to the traditional approach to education or the instructional paradigm. It is first and foremost a learner-centered education that is driven by the "knowledge, skills and attitudes" of the student and which is characterized by "personal control of learning by students" (Ibid.). Under this paradigm, students become "active discovers and constructors of their own knowledge". Knowledge construction, communities of learners, individual and collective discovery and problem solving, holistic learning: these will be important qualifiers for education in the 21st century. This new paradigm for education contrasts boldly with the traditional paradigm. The following table contrasts the two paradigms or the conventional and reform approaches to education:

Table 2.2 Comparison of conventional and reform approaches to instruction

(Means, Blando, Olson, Middleton, Morocco, Remz Zorfass, 1993)

Conventional Instruction	Reform Instruction
Teacher-directed	Student exploration
Didactic teaching	Interactive modes of instruction
Short blocks of instruction on a single subject	Extended blocks of authentic and multi-disciplinary work
Individual work	Collaborative work
Teacher as knowledge dispenser	Teacher as facilitator
Ability groupings	Heterogeneous groupings
Assessment of fact, knowledge and discrete skills	Performance-based assessment

The emphasis in the new era of language learning is on construction as opposed to transmission of knowledge. While the dominant psychology of the preceding era was that of behaviourism, constructivist psychology or philosophy has emerged as the alternative to the "instructional paradigm" and the behaviourist approach to education. Fosnot (1996) explains that, although constructivism is not a theory of teaching, it suggests taking a radically different approach to instruction from that used in most schools. She summarizes the constructivist approach as follows:

> ...a constructivist view of learning suggests an approach to teaching that givers learners the opportunity for concrete, contextually meaningful experience through which they can search for patterns, raise their own questions, and construct their own models, concepts, and strategies. The classroom in this model is seen as a mini-society, a community of learners engaged in activity, discourse and reflection. (p. ix)

The constructivist view argues that knowledge and reality do not have an objective or absolute value or, at the least, that we have no way of knowing this reality. Von Glasersfeld (1995) indicates in relation to the concept of reality: "It is made up of the network of things and relationships that we rely on in our living, and on which, we believe, others rely on, too" (p.7). The knower interprets and constructs a reality based on his experiences and interactions with his environment. Rather than thinking of truth in terms of a match to reality, von Glasersfeld focuses instead on the notion of viability: "To the constructivist, concepts, models, theories, and so on are viable if they prove adequate in the contexts in which they were created" (p.7).

Such a conception of knowledge leads thus to a conception of learning that contrasts sharply with the behaviourist view. Learning is no longer a stimulus-response phenomenon. Instead, it requires self-regulation and the building of conceptual structures through reflection and abstraction (von Glasersfeld, 1995). According to von Glasersfeld (1987), learning is a process of constructing meaningful representations, of making sense of one's experiential world. The focus of concern is not just the learner's cognitions, but the learner's cognitions, beliefs, and conceptions of knowledge (Ernest, 1995). It is the realities of others along with our own realities that we strive to understand, but we can never take any of these realities as fixed (Ernest, 1995).

Based on this view of learning, the teacher's role is transformed into that of a coach and analyzer of the strategies used to solve problems (Jonassen, 1991). Von Glasersfeld, 1995) describes the role of the constructivist teacher as that of a "midwife in the birth of understanding" whose job it is, not to dispense knowledge, but to provide students with opportunities and incentives to build it up. Teachers serve as "guides", and learners as "sense makers" (Mayer, 1996). They are coordinators, facilitators, resource advisors, tutors or coaches (Gergen, 1995). Most importantly, teachers themselves become learners along with students, as teaching becomes a learning process for the teacher (Driver, Aasoko, Leach, Mortimer Scott, 1994).

Where behaviorism emphasizes observable, external behaviours and, as such, avoids reference to meaning, representation and thought, constructivism takes a more cognitive approach. This subtle difference has profound implications for all aspects of a theory of learning. The way in which knowledge is conceived and acquired, the types of knowledge, skills and activities emphasized, the role of the learner and the teacher, how goals are established: all of these factors are articulated differently in the constructivist perspective. Within constructivism itself, authors, researchers and theorists articulate differently the constructivist perspective by emphasizing different components. The following principles of constructivism are some which have been commonly articulated by writers, researchers and educators. Constructivist learning environments are those that:

- emphasize the process and not the product (von Glasersfeld, 1987);
- stress conceptual interrelatedness, providing multiple representations or perspectives on the content (Jonassen, 1991) and allow for multiple modes of representation (Honebein, 1996);
- negotiate instructional goals and objectives (Jonassen, 1991);
- make evaluation serve as a self-analysis tool (Ibid.);
- represent the natural complexity of the real world (Jonassen, 1994);
- focus on knowledge construction, not reproduction (Ibid.);
- present authentic tasks (contextualizing rather than abstracting instruction) (Ibid.);
- provide real-world, case-based learning environments, rather than pre-determined instructional sequences (Ibid.);
- enable context- and content- dependent knowledge construction (Ibid.);
- support collaborative construction of knowledge through social negotiation (Ibid.);
- attend to students' prior and emerging knowledge (Ernest,1995; von Glasersfeld 1989);
- create experiences that challenge students' prior conceptions and knowledge (Savery Duffy, 1995);
- embed learning in a rich, authentic problem-solving environment (Wilson Cole 1991);
- provide for learner control (Ibid.); use errors as a mechanism to provide feedback on learners' understanding (Ibid.);
- pay attention to meta-cognition and strategic self-regulation by learners (Ernest, 1995);
- emphasize the importance of goals for the learner, and the dichotomy between learner and teacher goals (Ibid.);
- encourage ownership and voice in the learning process (Honebein, 1996);
- embed learning in social experience (Ibid.);
- encourage self-awareness in the knowledge construction process (Honebein, 1996).

These characteristics of constructivist learning have been echoed by many writers, appear frequently in the literature on education reform and are frequently discussed in relation to science and mathematics' education. Williams and Burden (1997) consider how a constructivist approach applies to language learning. They use a social-interactionist framework which they describe as a "much-needed theoretical underpinning to a communicative approach to language teaching, where it is maintained that we learn a language through using the language to interact meaningfully with other people" (p.39). They describe learning languages as a process of making sense of the world within a social context and through social interactions where the "personal constructions and subjective realities of teacher and pupil" converge:

> As we see it, babies are born into social worlds, come to develop a concept of self as a result of their interactions with others, and increasingly employ language to make sense of that social world and to help them play an effective part within it. Thus, an understanding of the social factors which play a part in our increasing competence as language users is essential for all language teachers. (p.3)

The authors outline ten basic propositions which they consider "crucial" for language teachers and which serve as a guide for teaching and learning languages from a constructivist perspective in the 21st century.

1. There is a difference between learning and education which implies that in order to be of value, a learning experience should contribute to a person's whole education as well as to their learning of an aspect of the language.
2. Learners learn what is meaningful to them so that whatever language input is presented to them, we cannot predict what each individual will learn or how the learner's language system will develop. Teachers must therefore have a sound grasp of what their learners see as important and meaningful.
3. Learners learn in ways that are meaningful to them which means that teachers will need to provide a variety of language learning activities which allow for different learning styles and individual preferences and personalities.
4. Learners learn better if they feel in control of what they are learning: learners need to be encouraged to talk about their aims and set goals for themselves regarding learning the language.
5. Learning is closely linked to how people feel about themselves. The individual's self-concept as a language learner will strongly influence the way in which he/she learns.
6. Learning takes place in a social context through interaction with other people. The nature of interaction in the target language will influence the quality of learning that language thus teachers need to be aware of the interactions that occur in the classroom.
7. What teachers do in the classroom will reflect their own beliefs and attitudes. Whatever methodology is used, it is the beliefs of teachers that will influence what goes on in the classroom.
8. There is a significant role for the teacher as mediator in the language classroom. The teacher fosters the right climate for individual respect, for confidence building, for appropriate learning strategies and for learner autonomy.
9. Learning tasks represent an interface between teachers and learners. Teachers' choice of learning activities reflect their beliefs and values and learners will interpret these activities in ways that are meaningful to them.
10. Learning is influenced by the situation in which it occurs. The broader social, educational and political context within which language learning experiences occur as well as the cultural background of the learners will influence the learning that takes place. (p.204)

These ten propositions provide us with ways in which to conceptualize language learning and teaching from a constructivist perspective. Certainly the focal point in their propositions is the position of the learner at the centre of the learning process. Individual meaning, individualized learning contexts, learner control and goals, self-concept, self-awareness: these elements all play a pivotal role in the learning process. The emphasis on the social context for learning highlights the social-constructivist underpinning in their approach. The contexts and situations in which language learning occurs are portrayed as instrumental in determining the learning which takes place. As well, it is the interaction with others who are a part of the situation or context that plays a major role in determining the success of the learning experience. The role of the teacher is also central in their approach. The role is described as one in which the teacher is acutely aware of and attuned to the needs of the learner, to the context for learning and, as well, to the teacher's own beliefs about learning and languages.

Pusak and Otto (1997) provide a description of language learning which fits well with constructivist principles as well as with the propositions of Williams and Burden. They describe a "new era" of language learning characterized by the following:

- Emphasizes process rather than product;
- emphasizes function over form;
- uses a holistic approach;
- develops communicative competency;
- develops cross-cultural insights and strategies for effective communication with other peoples;
- uses authentic materials and provides experiences for all levels of language learning;
- relies on performance-based assessment;
- values collaborative group work;
- sees students as lifelong learners;
- uses a broad language curriculum;
- favours development of critical thinking skills;
- operates in a multi-disciplinary context;
- promotes student-directed, student-centered learning;
- accommodates different learner styles and strategies.

Many of these characteristics of language learning described by Pusak and Otto could be applied to learning in other subject areas. Life-long learning, collaborative learning, critical thinking skills, performance-based assessment, student-centered learning, accommodation of different styles, focus on strategies, multi-disciplinary contexts, a holistic approach and the emphasis on process: these elements represent a general emphasis which can be given to teaching and learning in general. The American Psychological Association in its listing of principles for learner-centered education for the 21st century (1995) echoes the same elements as Pusak and Otto, as Williams and Burden and, in general, of constructivist learning. Its principles emphasize the importance of the social contexts for learning, knowledge construction, higher-order strategies and critical thinking, self-awareness and beliefs, authentic tasks, and the importance of the context for learning to mention but a few of the principles.

The principles of learning as articulated by Pusak and Otto, Williams and Burden, the American Psychological Association and, most importantly, by constructivism, provide the basis for a new era of language learning. Replacing the behaviorist framework which has guided language teaching for much of the last century is a highly student-centered approach to learning - that of constructivism and more specifically social-constructivism as described by Williams and Burden (1997). While Communicative Language Teaching presents a seemingly viable approach, it lacks any grounding in educational theory. Many aspects of CLT can be related to constructivism but the approach is nothing more than that - an approach. As Stern (1983) argues, what is needed is not a method or approach but a more deliberate interpretation of language teaching in terms of educational theory. Constructivism offers to language teaching a basis from which to derive approaches and methods.

The evolution of language learning from the early days of the behaviourist approach and now possibly to a constructivist approach parallels the evolution of technology use in language

teaching. As we shall see in the next section which looks at the evolution of technology use in teaching languages, behaviourism has dominated the CALL landscape since its beginnings. However, technology use is now slowly beginning to reflect constructivist principles. Pusak and Otto's description of the new era of language learning is predicated on the use of technology - specifically multimedia. Technology is also included as an essential element or catalyst in much of the literature on reform. It will no doubt play a pivotal role in all aspects of life and learning in the new millennium. The aim of this next section is therefore to describe the role technology has played in second-language teaching during the last century. The pattern of use, the development and general evolution of the use of technology use did not evolve independently of or even parallel to language and learning theories. Many factors - some social, some educational, some theoretical, combined to provide the conditions for change and for the implementation of particular techniques and use of certain equipment. The following section will give consideration to these factors in order to provide a comprehensive picture of the evolution of technology use during the past century and into the 21st century.

2.3 The Evolution of use of Technology in Second-Language Teaching

2.3.1 Introduction

The literature on the use of technology and, more specifically, computers in language learning, has centered largely around discussions and debates of pedagogical merits of technological devices (Stern, 1983). Approaches, typologies, phases, methods: all have served as focal points for organizing the past 50 years (1950-2000) of technology use in language learning. In her discussion of the role of the computer in language teaching, Garrett (1991) cautions against thinking of it in terms of a method. Instead she argues that it is "a medium or an environment in which a wide variety of methods, approaches or pedagogical philosophies may be implemented" (p.75). Grammar -translation activities, audio-lingual drills, or cognitive analysis of language, or a communicative syllabus: any of these, according to Garrett can comprise Computer-Assisted Language Learning (CALL).

Indeed, it is the way the computer is used and the context in which it is used that determines the efficacy (Chiquito, Meskill, Renjilian-Burgy, 1997). When we think about computer use, we must beware of technocentric thinking or "the tendency to give centrality to a technical object such as a computer" (Papert, 1987, p.23). For the purposes of this review therefore, it is the approach that has been taken to the use of technology in language learning that will serve as the organizing factor. What has been the teacher's role? What degree of control did the learner exert in relation to the program being used? What was the view of error-correction underlying the program? These are some of the issues that will be explored in this review of technology use from the behaviouristic language laboratory of the 1960's to the constructivist learning environments of the Internet at the end of the nineties.

2.3.2 The Language Laboratory

By the 1960's, the industrial production of the magnetic tape recorder made possible the language laboratory. Teachers using the then popular Audio-Lingual Method could rely on this new technology to model and reinforce student verbal responses and "to leave to the lab all of the drudgery of drilling and pattern and keep for themselves the interesting aspects of instruction" (Harding Rodgers, 1985, p.23). Thus, the language lab was considered a "major breakthrough in language teaching methodology because of its potential to take the boredom out of the classroom" (Ibid.). Stern (1992) remarked: "Technology became a central feature of the new audio-lingual method and the language laboratory raised hopes of a new era" (p.10). Likewise, Underwood (1989) commented: "Early proponents of the language lab proclaimed noisily that these machines would prove to be the ultimate teacher's aid - a tireless drillmaster, a perfect pronunciation model, and a way to free the teacher for more intellectual pursuits in the classroom" (p.71).

In spite of the optimism surrounding this new technological innovation, the language laboratory is today seen by many "as an unfortunate venture that resulted in a loss of credibility for language education and a growing suspicion among teachers about the value of mediated language teaching in general" (Pederson, 1987, p.101). In her brief review of the literature from 1959-62, Pederson highlights the criticisms of the medium which point largely to the lack of adequate research available at the time to answer teachers' questions, to provide direction, to enable the development of appropriate materials, and, especially, to maximize the potential of the tool in order to use it to enhance language learning. With the demise of the Audio-Lingual Method and the increased interest in Communicative Language Teaching, laboratory use appeared less and less relevant to the goals of language teaching: "With a more active and communicative classroom, the work in the laboratory seemed dull and irrelevant" (Rivers, 1990, p.274).

2.3.3 Behavioristic CALL

Technology use tends to mirror existing practices and "whenever a new medium comes in," says McLuhan, "it takes its initial content from the old" (Sprecher, 1987, p.14). McLuhan's (1964) "rearview mirror" phenomenon helps to explain why the first uses of computers in language learning were designed on the textbook and language lab paradigm. Chiquito, Meskill and Renjilian-Burgy (1997) describe the early phase of CALL as an attempt to "transfer existing foreign language textbooks to computer-based applications. Students could then essentially use the computer to turn pages of the textbook, fill in the blanks in workbook drills, and choose multiple-choice answers to questions" (p.72). As was the case with the language lab, this phase of CALL relied on its ability to simply do more efficiently many of the teacher's classroom tasks such as drilling and patterning. According to the typology of Maddux, Johnson, and Willis (1997) this type of computer use would be characterized as a Type I application. Unlike Type II applications which aim to make available new ways of teaching, Type I applications simply aim to render existing practices more efficient.

The influence of the language lab on the initial uses of CALL included a reliance on a behavioral philosophy of learning. Thus the first phase of use of computers in language teaching (the sixties and seventies) can be referred to as Behavioristic CALL (Warschauer, 1996a) or Instructional CALL (Wyatt, 1987). Backer (1995) provides a summary of this approach to computer-assisted language learning:

> Chronologically, the first trend in CALL (originally called CAI -Computer Assisted Instruction) was an electronic extension of "programed learning" or "programed instruction" (PL and PI, respectively) based on the behaviorist theories of Skinner and Bloomfield. According to these theories, all learning could be broken down into small "frames" and the learner could be drilled and evaluated in each frame until mastery. The teacher then brought the student to the next frame. In the computerized version, the progress of the student could be monitored and guided through "branching". Proficient students could automatically be sent ahead, while slower students could be routed to remedial lessons. According to Audio-Lingual and Cognitive Code methodologies, a major focus of language teaching was grammatical structures through drill and practice. Thus, the earliest attempts at computer-assisted language instruction, first appearing at some large universities in the late 1950's, stressed learning grammatical structures through electronic PI. (p.5)

This first phase was conceived in the fifties and implemented in the sixties and seventies (Warschauer, 1996a). Numerous theorists have provided typologies of the phases of and approaches to CALL. Wyatt (1987), in reference to the teaching of English as a second language, proposes a typology that distinguishes three approaches to or phases of CALL: instructional, collaborative and facilitative. According to Wyatt, Instructional CALL software corresponds to the first phase and can be identified with the Audio-Lingual Method. Thus early Instructional CALL shared many features with behaviourist teaching methodologies (Backer, 1995). Wyatt describes Instructional CALL as follows:

- Materials are presented in a highly-structured, predetermined manner.
- Repetitive language drills and practice are the main substance.
- Students are passive responders, not initiators.
- The computer functions as an authoritative instructor.
- A detailed set of high- and low-level learning objectives is provided.
- Learning paths are predetermined.
- The computer instructs the student; students learn from the computer.

Hubbard (1987) describes the behaviorist approach to CALL as one which presents vocabulary and structure appropriate to the learner's level through pattern reinforcement. It aims to maintain the learner's attention to the task and provides sufficient material for mastery and over-learning to occur. An essential premise underlying the approach is that of positive and negative reinforcement. Behavioristic CALL is designed to promote student mastery of a body of rules by indicating to the learner whether or not the language they produced matched that stored in the computer's memory (Garrett, 1987). Unlike communicative approaches which clearly downplay

explicit error correction (Schulz, 1996), Behavioristic CALL relies on it. The "wrong-try-again" model thus requires the learner to input the correct answer before proceeding, provides the learner with positive feedback for correct answers and does not accept errors as the correct answer (Hubbard, 1987).

Picard and Braun's (1987) descriptors of the didactic approach echo many of the characteristics of Behavioristic CALL. Such an approach typically is teacher-centered; determines the learning path; verifies what the student has learned and proposes reinforcing exercises; transmits knowledge and corrects errors. A didactic approach placed the computer in the role of electronic drill master (Backer, 1995), computer-as-tutor (Taylor, 1980) or computer-as-magister (Higgens, 1986). In this role, the computer initiates and controls procedures and judges performance. "The computer-magister knows the truth, intervenes to guide the student toward that truth, and then judges the student's performance" (Backer, 1995, p.3). "The computer asks the questions and has the answers", automates "routine correction" thus eliminating "the arithmetic burden imposed on language teachers" boasts Hope, Taylor and Pusack's (1984) description of CALL. They describe further the computer in the role of the teacher:

> Programmed imaginatively, the machine embodies the best strategies and insights of the experienced language teacher, multiplying the teacher's contacts with students for certain kinds of language practice. Good programs can offer in this way, individualized attention and can allow students to work at their own pace. Students can work in privacy without fear of reprisal or ridicule regardless of how slow they might be or how often they give incorrect answers. Immediate diagnosis saves time and frustration and helps students weed out their errors. Computers possess the quality of infinite patience. They treat each student in the same way without favoritism. They are also very consistent in their responses, regardless of how many hours they have been working. Even the best of teachers cannot show the same level of enthusiasm, interest, and energy, day in and day out. (p.16)

In spite of the perceived advantages of Behavioural CALL, its detractors grew particularly as interest grew in CLT. The focus on form rather than on meaning, sketchy and vague help or feedback, the computer as "evaluative task-master that asks all the questions and judges all the answers" and "discrete points of grammar or vocabulary, mostly out of context and devoid of any real meaning": these are some of the criticisms cited as the defects of Behavioristic CALL (Underwood, 1984). Backer (1995) notes that a further problem with CALL was its underlying "assumption that one student would work at each computerized work station". This assumption required "computer hardware well beyond the financial means of most language learning facilities" and resulted in physical and psychological isolation of students (Backer, 1995, p.6).

2.3.4 Communicative CALL

The tendency to take a behavioral approach to CALL declined as did disenchantment with the Audio-Lingual Method and with behavioral psychology. During the seventies and particularly in the eighties, interest grew in Communicative Language Teaching. Krashen's language acquisition

theory, along with a growth in socio-linguistics led to a greater focus on the role of meaning and communication in language learning. The shift in focus paved the way for an evolution in CALL during the seventies and eighties towards what we can refer to as phase two of CALL: Communicative CALL. Underwood, (1984) developed a comprehensive set of principles for Communicative CALL. He argues that such an approach to language teaching:

1. focuses on communication rather than on the form and avoids drill;
2. teaches grammar implicitly through the lesson rather than explicitly;
3. allows and encourages the student to generate original utterances rather than merely manipulate prefabricated language;
4. does not judge or evaluate everything the student does;
5. avoids telling students they are wrong;
6. does not reward students with congratulatory messages, lights, bells whistles: success is sufficient reward;
7. does not try to be "cute";
8. uses the target language exclusively;
9. is flexible and avoids having only one response;
10. allows the student to explore the subject matter by providing an environment in which to play with language or manipulate it;
11. creates an environment in which using the target language feels natural;
12. does not try to do anything that a book could do just as well;
13. is fun, attractive, optional, supplementary: students explore, experiment and learn without being evaluated.

Hubbard (1987) identifies three categories of approaches to second-language teaching and, for each approach, provides a list of descriptors which can be applied to the evaluation of CALL software. CALL software will be representative of a particular approach to the extent that it meets certain criteria in relation to the underlying principles of the approach. The Communicative Approach or CLT is subsumed under the "acquisition approach" which Hubbard describes as follows:

1. provides meaningful communicative interaction between the learner and the computer;
2. provides comprehensible input at a level just beyond that currently acquired by the learner;
3. promotes a positive self-image in the learner;
4. motivates the learner to use the software;
5. motivates the learner to learn the language;
6. provides a challenge but does not produce frustration or anxiety;
7. does not include overt error correction;
8. allows the learner the opportunity to produce comprehensible output;
9. acts effectively as a catalyst to promote learner-learner interaction in the target language.

Computer tools such as word-processors and desk-top publishers might serve as a model of Communicative CALL. The role of the computer in Communicative CALL could also be referred to by Higgen's (1986,1988) computer-as-pedagogue. In this role, the computer "waits until summoned, responds to requests and serves". Although knowing the truth, the pedagogue

patiently provides only the requested information or activities in order to lead to exploration and discovery on the part of the student (Backer, 1995, p.3). Legenhausen and Wolff (1987) in their typology of CALL focus on how classroom activities relate to real-world activities outside of the classroom. Using their typology, we can describe the role of the computer in Communicative CALL as simulator of reality. While the applications are still didactically motivated as in Behavioral CALL, the simulations provide opportunities for a focus on communication. Although, as the authors argue, the dichotomy between classroom and real world is not overcome.

The types of computer programs using a communicative approach might still include those of the drill and practice type. The difference with Communicative CALL however is that student choice, control and interaction play a more important role (Warschauer, 1996a). Other types of Communicative CALL programs rely on the model of computer-as-stimulus (Taylor Perez, 1989). "In this case, the purpose of the CALL activity is not so much to have students discover the right answer, but rather to stimulate students' discussion, writing, or critical thinking" (Warschauer, 1996a, p.3). As Waschauer cautions however: "...the dividing line between Behaviouristic and Communicative CALL involves not only which software is used, but also how the software is put to use by the teacher and students" (p.3). Thus this second phase of CALL does not distinguish itself totally from the first phase. Instead, it serves moreso as a bridge to what could will be referred to the third phase of CALL.

2.3.5 Technology-Enhanced Language Learning (TELL)

To emphasize the growing invisibility of the tool and the shift in emphasis on the uses of the tool, it would seem appropriate to employ a different term to characterize this period in the evolution of computer use in language teaching. Whereas in phase one and two, we referred to Computer-Assisted Language Learning, we will now instead adopt use of the term Technology-Enhanced Language Learning. The distinction between CALL and Technology-Enhanced Language Learning (TELL) is that the computer simultaneously becomes less visible yet more ubiquitous. "The change in emphasis from computer to technology places direct importance on the media of communication made possible by the computer, which itself often remains unseen, rather than on the computer itself" (Bush Roberts, 1997, p.vii). Garrett (1991) distinguishes between technology that assists learning and that which supports learning. Whereas in CALL, the computer assisted learning, it might be said that in TELL, the computer supports learning. This third phase of technology use in second- and foreign-language teaching is characterized by the use of multimedia and the Internet. It can also be characterized by a clearly delineated move away from behaviorist, drill and practice type software and a move towards more constructivist uses of the tool. It also represents a certain rejection of Communicative CALL as Warschauer and Healey (1998) explain:

> Though communicative CALL was seen as an advance over behavioristic CALL, it too began to come under criticism. By the late 1980s and early 1990s, critics pointed out that the computer was still being used in an ad hoc and disconnected fashion and thus "finds itself making a greater contribution to marginal rather than central elements" of the

> language learning process (Kenning Kenning, 1990, p. 90). This corresponded to a broader reassessment of communicative language teaching theory and practice. Many teachers were moving away from a cognitive view of communicative teaching to a more social or socio-cognitive view, which placed greater emphasis on language use in authentic social contexts. Task-based, project-based, and content-based approaches all sought to integrate learners in authentic environments, and also to integrate the various skills of language learning and use. (p.2)

The role of the computer once again shifts in this phase of computer use in language teaching. Unlike in the previous phase where the computer served in the role of simulator of reality, in this phase, using the typology of Legenhausen and Wolff (1987) the computer is able to serve as generator of reality. The dichotomy of classroom versus real world disappears as technology allows the real world to be "brought in" to the classroom. In this phase, the discrepancy disappears between the didactic situation of the classroom and that of the world outside of the classroom. The computer allows classroom-based learners to experience realities from outside of the classroom i.e. from the "real world". Hubbard's (1987) typology uses language teaching approaches to categorize CALL programs: Behavioristic CALL approaches, explicit learning approaches, and acquisition approaches. In this third phase of CALL, the computer acts as a facilitator of language acquisition.

Warschauer (1996a) refers to the third phase of use of computers in teaching second languages as Integrative CALL. He uses the term *integrative* to refer to efforts at developing models which would integrate various aspects of language learning for example using task- or project-based approaches. Integrative CALL relies on use of multimedia and the Internet and more specifically on hypermedia. Hypermedia, explains Warschauer, allows for easy integration of the skills of listening, reading, writing and speaking, authentic learning experiments, student control over their learning and a focus on the content. Hypermedia also creates an environment for the exploration of vast amounts of information, experimentation and discovery (Underwood, 1989). Multimedia's capacity for the integration of image, sound, audio and video represents what can be characterized as a fundamental challenge to the textbook as the "font of knowledge" as well as a challenge to the "dynamics of the textbook/classroom model of instruction" (Pusak Otto, 1997, p.15).

Multimedia computers can provide an accurate portrayal of the target language and provide learners with control and feedback. More importantly though they facilitate a methodological and theoretical advance that shifts the emphasis away from the traditional production of sentences common with CALL to an emphasis on "input and intake" (Pusak Otto, 1997). Multimedia also provides a "massive storehouse of recorded realia" (Ibid.) to facilitate authentic learning. As well, multimedia provides support for different learning styles of language learners by deploying different neuro-systems in learning through its reliance on sound, colour, animation etc. (Hanson-Smith, 1997). In spite of the advantages of multimedia for language learning, Warschauer argues that there are problems related to its use for language teaching. The lack of programs based on sound pedagogical principles combined with the lack of interactivity and intelligence of these programs limit the ability of multimedia technology to allow for the integration of meaningful

and authentic communication. Hanson-Smith (1997) argues in a similar vein about the lack of "appropriate pedagogy" of multimedia whereby the media aspects often drive the content rather than the other way around.

On the other hand, computer-mediated communication made possible in online learning environments, posits Warschauer, can allow for a truly integrative approach to technology use by providing an environment where authentic and creative communication are fully integrated. Warschauer argues that computer-mediated communication "is probably the single computer application to date with the greatest impact on language teaching" (p.5). It also allows not only one-to-one communication, but also one-to-many, allowing a teacher or student to share a message with a small group, the whole class, a partner class, or an international discussion list of hundreds or thousands of people. The integrative function of computer-mediated communication is illustrated as follows:

> Computer-mediated communication allows users to share not only brief messages, but also lengthy (formatted or unformatted) documents--thus facilitating collaborative writing--and also graphics, sounds, and video. Using the World Wide Web (WWW), students can search through millions of files around the world within minutes to locate and access authentic materials (e.g., newspaper and magazine articles, radio broadcasts, short videos, movie reviews, book excerpts) exactly tailored to their own personal interests. They can also use the Web to publish their texts or multimedia materials to share with partner classes or with the general public. (p. 5)

n a discussion of the use of technology from the perspective of Teachers of English to Speakers of Other Languages (TESOL), Hanson-Smith (1997) examines the pedagogical practices that have benefitted or will benefit from technological enhancement. The traditional four-walled classroom with chalkboard and textbook is enriched by an Internet connection in the school. Increased linguistic diversity, extended listening practice, global interaction with other learners and native speakers through e-mail and chat: these are some of the advantages offered through online learning environments and computer-mediated communication. Authentic language/content-based learning are facilitated, stimulated and simulated through technology use. The World Wide Web allows for an instantaneous exchange of information to and from sites and between individuals. Use of the Internet demands a level of student engagement in authentic language encounters that would barely be possible face-to-face (Hanson-Smith, 1997). Two-way video and voice links and video-conferencing will further facilitate attempts at cross-cultural communication and collaboration:

> Language learners may post messages to a bulletin board, which users may "drop by" to look at, or they may join a list and have messages sent directly to their own "mail box," or they may enter "live" chat areas where communication is simultaneous, as if one were "talking" by typing. A number of sites now exist specifically created for ESL learners (and for learners of other languages as well) to exchange ideas on topics of real interest to them. Real-time chat rooms, MOOs (Multi-User Object-Oriented sites) or Telnet sites also usually have access to an online dictionary for quick, real-time searches. (Hanson-Smith, 1997, p.5)

Collaborative and task-based learning are also made possible through online learning. Global classroom curricular exchanges and inter-cultural exploration also offer great potential for language learners. Use of the Internet in teaching can also facilitate more proactive, conscious, cognitive learning whereby the student accesses, evaluates, and deploys his or her own learning methods. Students may research current events, historical and cultural topics, or hundreds of other topics in thousands of online archives. They may also question native speakers using e-mail, look up words online as they try to express themselves, and collaborate with groups of learners, native and nonnative speakers of the target language globally and instantaneously (Ibid.).

Computer-mediated communication (CMC) using the Internet has the power to allow learners to collaborate and to construct knowledge together (Warschauer, 1997a). Online learning, explains Warschauer, breaks the pattern of teacher-centred discussion in the classroom. In his review of studies on CMC, the author notes that the social dynamics of CMC result in more equality of participation than what would be typical in face-to-face communication. As well, students can initiate authentic communication with each other, with the teacher, in the classroom or outside the classroom. Such communication can be characterized as situated learning or learning that is situated within a particular context yet transferable to a broader context or environment. Brown, Collins and Duguid (1989) have developed the theory of situated learning which argues that learning, both outside and inside school, advances through collaborative social interaction and the social construction of knowledge. In situated learning, knowledge is presented in an authentic context, i.e., in settings that would normally involve that knowledge. Online exchanges using the Internet provide such opportunities for authentic and meaningful communication, social interaction and collaboration.

Singhal (1997) explains how use of the Internet can promote higher-order thinking skills. In searching the Web for specific information, logic skills are required of the language learner. Students must review the information through activities such as scanning, discarding, and evaluative judging. Finally, the learner goes through a process of synthesizing the information in order to make a complete and coherent whole. Such an endeavor permits students to practice reading skills and strategies. Singhal describes as well how the Internet allows students to interact with the "real world". It provides authentic materials, current information, and promotes incidental learning.

The value of OLEs as a source of invaluable authentic material is discussed by Smith (1997). Smith uses the term *virtual realia* to refer to authentic material or, more specifically, "(in language teaching) digitized objects and items from the target culture which are brought into the classroom as examples or aids and used to stimulate spoken or written language production" (p.1). Realia consists of cultural artifacts as well as teaching aids that "facilitate the simulation of experience in the target culture". According to Smith, such materials promote active teaching and learning, help to make the target language input as comprehensible as possible and build a bridge between the classroom and the world. Realia provide language learners with "multi-sensory impressions of the language" and aid in contextually grounding instruction by bringing students into contact with language as it is used in the target culture in order to meet actual

communication needs." Realia break down geographic barriers and thus provide insights into the target culture. Smith summarizes the benefits of virtual realia by comparing them with traditional realia:

> Like more traditional realia, virtual realia is motivating and meaningful in that it brings an authentic piece of the target culture into the language classroom. The added advantage with this new medium is that realia-based lessons need not be bound to cities and places that the teacher has physically been to but, rather, can be based on materials from a variety of places collected from a variety of people with various interests. Further, students interact directly with these materials rather than with someone else's interpretation and analysis of them and thus may find virtual realia even more appropriate for their interests than traditional authentic materials collected by the teacher. Another benefit of virtual realia is that the materials are truly interactive and more flexible than traditional ones in that they can be easily adapted and up dated. (p.2)

OLEs offer many benefits for foreign- and second-language education. Compared with earlier forms of technology use, they not only offer a greater variety of tools and mediums but also allow for a move away from the behavioural approaches to language learning previously so common with computer use in the teaching of second languages. Some of the main advantages of the use of OLEs in second- and foreign-language teaching identified to date can be summarized as follows:

- Online interaction can lead to cooperative projects and increased communication between students from all over the world, in turn leading to the development of social skills. (Singhal, 1997)
- The linguistic nature of online communication is desirable for promoting language learning. Electronic discourse tends to be lexically and syntactically more complex than oral discourse. (Warschauer, 1996b)
- The Internet creates optimal conditions for learning to write by providing an authentic audience for written communication. (Warschauer, 1997b)
- Use of the Internet is motivating for students because they see it as new and exciting and as a tool they will need in their future careers. (Muehleisen, 1997)
- Communication with native speakers furthers literacy development for authentic purposes, enables language learners to compare student perspectives on an issue, and allows them to practice specific skills such as negotiating, persuading, clarifying meaning, requesting information, and engaging in true-life, authentic discussion. (Singhal, 1997)
- Listservs from around the world can offer news and discussion groups in the target language providing another source of authentic input and interaction. (Ibid.)
- Chat rooms can be used to stimulate authentic communication and assist students in developing specific communication skills such as arguing, persuading, or defending a particular point. (Ibid.)
- The teaching of culture can be facilitated through the immediate feedback and contact with second-language speakers. (Ibid.)

- The Internet can be used to acquire information from language resources for a variety of purposes such as current geographical, historical, social/cultural, economic, and political information from the countries in which the target language is spoken. (Ibid.)
- Students can read Web versions of daily newspapers and same-day news reports and thus participate in the culture of the target language and learn how cultural background influences one's view of the world. (Ibid.)
- The Internet can serve as a medium for experiencing and presenting creative works, and as a platform for students' own work such as essays, poetry, or stories. (Ibid.)
- The Internet provides supplemental language activities which can provide students with additional practice in specific areas of language learning. These include reading tests and comprehension questions, grammar exercises, pronunciation exercises possible through the available multimedia capabilities, cloze tests, vocabulary exercises. (Ibid.)

In summary, OLEs present certain possibilities and potential for language learning that cannot be achieved otherwise. Nor can the new era of language learning be achieved effectively without use of OLEs. OLEs have the capacity to generate reality and thus to provide access to the real world to an extent that would not be possible otherwise. They provide tools that support a level of collaboration and communication which cannot be provided by any other learning environment. They allow for a focus on knowledge production, construction and sharing to an unprecedented extent. Finally, OLEs provide unparalleled support for constructivist learning. As Ryder (1994) remarks, the Internet is "a powerful environment for constructivist learning":

> It is an organic system which grows and responds to human participation. A virtual library, the Internet provides abundant information resources. But unlike a library, the Net is a potent environment for generative learning where participants, through interaction, add value to the resources they exploit. The flexibility of collaborative environments provides scaffolding for learners in times of rapid change where standard instructional approaches can be less than adequate. The power of the Net is exploited by crafted learners using collaborative strategies and sophisticated cognitive tools. (p.1)

There are numerous benefits of language learning in online environments which were not possible with earlier forms of technology. The capacity for communication makes online learning very attractive for learning languages and it is this feature that is often touted as one of its major advantages. The capacity to allow for individualization is also a valuable feature for language learners. Unlike CALL which presented the same material, in the same way and with the same analysis of performance (Garrett, 1991), online learning provides a multitude of presentations and a wide range of content suitable to different learning styles and strategies. At the same time, ironically, such a range of styles and content can also present itself as a weakness of the new medium. Garrett (1991) questions whether or not students can make best use or the use intended by their teacher of hypertext and hypermedia material such as that offered by the Internet or online learning environments. Garret points to many of the unresolved questions related to students' browsing in large databases:

> If learners have access to a lot of data regarding something they need to know an unspecified amount about-reference materials or related bodies of more or less directly relevant information, far more than can realistically be accessed-what do they in fact look up? Do they know what they need to look for? How do they make use of it? In the long run, do they perhaps learn as much from browsing, in what might seem to us an inefficient or purposeless way, as from directed exploration? How freely does what kind of student at what level of learning browse and explore? Do learners get lost moving around in an infinitely complex set of related data? What kind of student gets lost under what circumstances? What kind of lesson structure or visual clues tend to prevent their getting lost? (p.93)

Garretts' questions remind us that there are many unanswered questions and challenges regarding the use of online learning environments for language learning. (Singhal, 1997) highlights some of these challenges to use of the Internet in language teaching:

- When lines are busy due to many users, it may take time to access information or browse the Net and technical glitches themselves can lead to frustration.
- Lack of training and familiarity on part of the teachers can make it difficult to implement the Internet in the language classroom.
- Foreign language teachers are especially anxiety prone to computers since they often have little experience with computers.
- For the most part, computers in schools are used for business or computer science courses.
- Costs related to training, as well as on-line costs of using a provider are issues that may interfere with implementing such a technology in schools, especially in schools that have little funding.
- Censorship may also be a concern to language programs and instructors. The Internet offers access to all types of issues and topics, some of which are unsuitable for children.
- Equity issues may also present difficulties when attempting to implement such technology in the classroom. Rural and inner-city schools, already hard-pressed to provide Internet access, may find it less affordable.
- Many institutions such as these may also not have the computers or computing facilities necessary to implement such type of technology.

Like Singhal, Warschauer (1997b) recognizes both the potential and the challenges related to OLEs and language learning. Internet activities can result in various complexities that may not occur in the traditional classroom. Students may not necessarily have the prerequisite computer skills necessary for success. Other complexities relate, not to human factors, but to issues of hardware and scheduling. Malfunctioning software and/or hardware as well as unavailable labs may thwart students' and teachers' most well-intended efforts. Certain online activities such as exchanges between partnered classes must be carefully managed to ensure success. Differences in understanding, schedules, language, and experience can result in complications in an exchange.

To ensure optimal conditions for a successful online language learning experience, Warschauer suggests certain guidelines for teachers. Teachers must carefully clarify their goals in order to be able to plan and organize online activities that best lead to realization of these goals. Online activities should not be simply add-ons to the curriculum rather they should represent an attempt at integration and should as well place sufficient cognitive and linguistic demands on students. The challenges related to learner preparedness require that teachers provide support to avoid a situation where students become overwhelmed by the demands of learning in the new environment. Handouts, training sessions, pair-work and direct assistance are some of the ways in which the teacher can provide support. One of the most significant ways in which a teacher can ensure greater success in online learning is to use a learner-centered approach that allows student input into decisions and which ensures "de-centered interaction". One important aspect of their role in online learning will involve helping students develop the necessary learning strategies. Most importantly, argues Warschauer, teachers must learn to become a "guide on the side" rather than a "sage on the stage".

Providing teachers with guidelines and helping them understand the challenges and difficulties related to online learning is a necessary step in ensuring that their experiences in the new environment will be successful. Teachers cannot simply assume that the techniques, approaches and strategies that worked well in the traditional learning environment of the classroom can simply be successfully transposed into the environment of the Internet. One of the important reasons that such a transposition cannot occur easily is that the Internet was not designed as a learning environment. As Warschauer has argued, use of the Internet as a learning environment requires the adoption of different roles and necessitates a certain preparation in order to meet its particular challenges.

The challenges will be numerous and complex for teachers as they move towards use of new technologies and new practices in the 21st century. Use of new technologies may require that they abandon old ways of doing and of believing. The approaches to teaching and to technology use, the theories which have made sense to them, the environments which have provided them with considerable security and comfort: all of these aspects may need to change if teachers are going be able to effectively exploit the new online environments for learning. The previous sections of this chapter have outlined the new environments, theories and approaches to teaching languages and using technology which will form the landscape for learning in the 21st century. The following section of this chapter provides a summary of these new elements in order to outline the vision of language learning in the 21st century.

2.4 The Vision of Language Learning in the 21st Century

This chapter has provided a summary of approaches and of the use of technology in the teaching of FSFL for the past 100 years. The evolution of approaches described in this chapter culminated with the new era of language learning characterized by a reliance on constructivist philosophy. The evolution of technology use described in this chapter culminated with Technology Enhanced Language Learning. If we combine the new era of language learning with use of Technology Enhanced Language Learning we have a vision or an ideal for the teaching of FSFL in the 21st century. This vision is characterized by use of an approach which is referred to here as the Digital Approach. This approach relies on use of online learning environments and constructivism applied to language learning.

Whereas the approaches in the 20th century relied essentially on use of traditional environments, the Digital Approach relies essentially on use of OLEs. TLEs are generally structured, organized, censored, controlled and closed, provide a filtered reality and are characterized by sameness and stability. Instruction in these environments follows a linear, sequential pattern, is structured by time and relies on use of the text-book and supports synchronous communication. By contrast, OLEs are open, decentralized, unorganized, unstructured, uncensored, uncontrolled, generate reality and are characterized by sensory-vastness, growth and change. Instruction in these environments follows a non-linear/hypertextual pattern, operates independent of time and supports asynchronous as well as synchronous communication.

Whereas the approaches of the 20th century drew essentially on the principles of behaviourism, the Digital Approach will need to draw on the principles of constructivism. Some of the behaviourist approaches described in this chapter included Grammar-Translation, the Direct Method and the Audio-Lingual Method. These approaches or methods were centered on instruction with activities, techniques, skill-development and resources dictated largely by the underlying behavioural philosophy. The teachers' role was central and knowledge was conceived as a transferable commodity. Communicative Language Teaching based on a humanistic philosophy, rejected many of the tenants of previous approaches and reflected many of the principles of constructivism. However, CLT with its emphasis on one concept - that of communication, failed to provide the philosophical basis needed to define epistemological issues and to guide daily practices.

The new era of language learning draws heavily on constructivist principles as they relate to language learning. Knowledge construction replaces the earlier emphasis on knowledge transmission and reproduction. Students become the centre of the instructional process resulting in a de-emphasis of the role of the teacher as well as that of the curriculum. Students' prior knowledge and conceptions form the starting point for learning experiences. Instead of a predetermined sequence dictated by the curriculum, learning paths are determined by the students' needs and interests. Communication is redefined as a process of social negotiation of meaning and collaborative knowledge sharing. Real-world learning provides for meaningful and purposeful learning activities and experiences.

Whereas the approaches of the 20th century relied on Behaviouristic and Communicative CALL, the Digital Approach of the 21st century will depend on Technology Enhanced Language Learning. Behaviouristic and Communicative CALL reflected the basic philosophical tenants of behaviourism and humanism respectively. With CALL, technology use often provided a means to take away much of the drudgery of language learning by digitizing drills and practice and by simulating reality. The computer served as simulator of reality, stimulator, tutor, tool, pedagogue or magister. The computer's role remained marginal or peripheral with technology being used in a disconnected way. Teaching remained an essentially explicit and didactic activity. The computer represented a means to improve some practices but did not transform them.

With TELL, technology's role becomes one which supports a constructivist, student-centred approach. Technology use becomes an integral and necessary part of the learning process and not simply an add-on designed to extrinsically motivate students. The computer is valued because of its capacity, not only to simulate reality, but to generate it. Real-world learning, authentic content and resources, a focus on global communication and collaboration all result in a blurring of the boundaries between the classroom and the realities of the world surrounding it. The computer represents a means to experiment with new practices and not simply a means to improve practices. Teaching is no longer an explicit, didactic activity because such approaches are poorly supported by online learning environments on which Technology Enhanced Language Learning relies.

The Audio-Lingual Method, the Direct Method and even Communicative Language Teaching provided a highly prescriptive approach to second and foreign language teaching. The Digital Approach, by contrast does not dictate or prescribe specific activities, techniques or methods. It does, however, rely on use of online learning environments instead of traditional learning environments. In terms of the learning theory which underlies the approach, constructivism replaces behaviourism. In relation to the way in which technology is used, Technology Enhanced Language Learning replaces the previous reliance on Computer Assisted Language Learning. The environment, the learning theory and the way in which technology is used will dictate a change in activities, techniques, roles and learning experiences to allow for an approach which this study refers to as the Digital Approach.

The following table summarizes this evolution of approaches during the past 100 years and indicates where the Digital Approach lies in the evolution. The vision of learning FSFL corresponds to the far right hand column which summarizes the main components of language learning in the 21st century.

Table 2.3 Summary of the evolution of approaches and of technology use in the teaching of FSFL

Point of comparison	20TH CENTURY		21st CENTURY
	<< 1970	1970 >>	
APPROACHES METHODS	Audio-Lingual Method, Direct Method	Communicative Language Teaching	The Digital Approach
TECHNOLOGY USE	Behaviouristic CALL	Communicative CALL	Technology Enhanced Language Learning
THEORY OF LEARNING	Behaviourism	Humanistic influences	Constructivism
ENVIRONMENT	Traditional	Traditional	Online

Whether or not the vision for learning FSFL in the 21st century can be realized will depend on the uses which teachers make of OLEs. The computer does not constitute a method in itself rather it is a medium or an environment in which a wide variety of methods, approaches or pedagogical philosophies may be implemented (Garrett, 1991). Yet, as Mather (1996) explains, the didactic approach is not the most appropriate for use with the Internet. Instead, constructivism is a more natural partner and meshes nicely with the strengths that educational technology has to offer. As Mather posits: technology may well force the issue in the ongoing dispute of constructivism versus didacticism, giving the upper hand to the former. Indeed, new technologies make new kinds of interactions possible and thus affect theories of learning in the same way that changes in theories of learning affect our uses of technology (Cognition Technology Group at Vanderbilt, 1996).

Bracewell et al. (1998) conducted a review of the literature on the contribution of online resources to teaching and, as such, identify perspectives, models and trends which provide an organizing framework within which to conceptualize the constituents of change. As part of their review, they seek to identify models of use for online resources and tools, and identify two perspectives. According to the first perspective, technology serves to extend or replicate the classroom i.e. to digitize existing practices. The second perspective focuses on technologies that transform the instructional paradigm, restructure the organization of the classroom, and allow educators to make use of technology to do things differently. This dichotomy of uses corresponds to the Type I and Type II applications as identified by Maddux, Johnson and Willis (1997).

If the vision for teaching and learning FSFL in the 21st century is to be realized, teachers' use of OLEs may necessitate a transformation of paradigms and practices. Use of OLEs must exploit to the fullest the tools and the potential that they have to offer. This will mean that teachers must

not simply do better what they have always done but that they must do things differently. This study is premised on the argument that what teachers do represents a reflection of what they believe. What they believe will determine the uses they make of OLEs. The uses they make of them will determine whether or not they are able to realize the vision. Thus, understanding teachers' beliefs about teaching and learning FSFL in online learning environments constitutes an important first step in the process of transforming beliefs in order to help achieve the vision of learning FSFL in the 21st century.

2.5 Conclusion

Some of our most important priorities for the teaching of second and foreign languages can be strongly supported by intelligent use of technology: "But these will not be accomplished unless and until teachers themselves take the initiative to think through what the technology should be able to do for them and for their students and make their needs known" (Garrett, 1991, p.95). The aim of the present research is to look at teachers' thinking about the technologies presently available to them in OLEs. The evolution traced in this chapter has provided important historical information, a theoretical background and concepts which frame current thought about the possibilities and potential of OLEs.

Behavioristic CALL fit well with the prevailing Audio-Lingual Method. Communicative CALL suits a communicative approach to language teaching. And constructivist use of the Internet suits and supports the vision of learning for the 21st century outlined in this chapter. But what happens in situations where the teacher's didactic or transmissionist approach meets the potentially constructivist environment of the Internet? Prawat (1992) argues that constructivist approaches to teaching and learning are inconsistent with what many teachers believe. Will teachers' beliefs about teaching and learning FSFL using OLEs result in nothing more than old wine in new bottles or simply a means to digitize existing practices? Where do teachers' beliefs fall in relation to the evolution outlined in this chapter and, more specifically, in relation to the vision? Do teachers' beliefs about teaching and learning FSFL in online learning environments reflect elements of the vision of learning for the 21st century espoused by this study? In responding to these questions, this study seeks to identify, describe, and analyze teachers' beliefs in order to be better able to gage the potential of the Internet to be effectively exploited as a learning environment. The following chapter will provide a review of the literature related to teachers' beliefs. The review will add to the framework provided in this chapter through its consideration of studies previously conducted in the area of teachers' beliefs. The chapter will also provide information about beliefs themselves, their characteristics and their relationship to practice and to change.