Using Technology in Language Teaching and Listening Comprehension: Revisiting what Teachers Should Know and Do

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Abstract

Previous arguments concerning the influence of technology on learning have proposed that it is either the medium that influences learning or it is the instructional design applied to a particular medium that enhances knowledge acquisition (Clark 1983; Kozma 1991). Absent from both perspectives is the role of the teacher and how he or she must understand and manage not only the technology and the instructional materials used, but must also be cognizant of other instructional components necessary for the effective use of technology. This paper reemphasizes the status of the teacher as the central decision-maker of technology use in language teaching, or in this instance, media-based listening comprehension. Previous research and recent results of a qualitative study on the "mismanagement" of listening comprehension technology support and reflect how a teacher's combined knowledge of students' preferences and needs, sound pedagogical and theoretical strategies, and the media and materials used can influence language learning through media-based activities.

Introduction

The use of media in language learning has greatly evolved in recent years, primarily due to the arrival of more sophisticated technologies. Therefore, as more and more foreign language departments acquire media tools for learning, it can be expected that more and more educators will attempt to use them in their language courses (Yaverbaum, Kulkarni and Wood 1997). Already, second language (L2) teachers assign audio, video, computer or Internet-based

listening activities to complete either at home or in a lab setting. The goal of such assignments is to help students better hear the intricate sounds, enunciations and content of the target language and to develop their abilities to communicate with others. But how effective is media for learning? Clark argues that "... media are mere vehicles that deliver instruction but do not influence student achievement any more than the truck that delivers our groceries causes change in our nutrition" (Clark 1983, 445). Kozma (Kozma 1991, 179) furthers that "... the capabilities of a particular medium, in conjunction with methods that take advantage of these capabilities, interact with and influence the way learners represent and process information and may result in more or different learning when one medium is compared to another for certain learners and tasks." Both arguments are well founded. However, despite quality materials and technology, students often perform poorly and are frustrated by listening comprehension exercises (Jones Vogely 1998). Thus, if the technology or the materials are not, in and of themselves, adequately influencing learning, then what other component might help students "proceed and succeed" with listening comprehension technologies and activities? If teachers decide what technological tools and materials are used, might their decisions and strategies in relation to these ideals also influence students' learning with technology?

Previous research suggests that careful planning in the use of technology (Field 1998; Herron 1994; Stone 1988) or awareness of students' needs and preferences (Chun and Plass 1996a; Chun and Plass 1996b; Felder and Henriques 1995; Mayer 1997; Plass, Chun, Mayer and Leutner 1998; Pouwels 1992) creates a more effective learning environment. When teachers are knowledgeable of the content used with a particular medium and its relationship to their curriculum (Hopey *et al.* 1995; Squires and McDougal 1996), or when they incorporate support and interaction into the classroom in relation to the technological materials used (Crook 1994; Faerch and Kaspar 1986; Joiner 1986; Wyatt 1984), this too influences learning. Though these studies already demonstrate the importance of teachers' decisions in relation to language teaching and technology, poor teacher strategies unfortunately continue in the L2 classroom, primarily because many teachers are still not taught how to incorporate technology appropriately into language teaching. This article therefore reunites these key issues and more holistically introduces teachers to the relationship between their pedagogical

strategies and the media, methods and materials used. To begin, I introduce the results of a recent qualitative study on teacher and student attitudes and experiences with what one would construe as "misuse" of media-based listening comprehension activities and highlight the effects of teachers' poor decisions on students attitudes towards listening comprehension. Based on these results, I examine how a teacher's consideration of students' learning preferences and language learning needs can affect their language learning experience, and discuss pedagogical strategies that will support students' work with L2 material presented in a media format. Enmeshed in this presentation, I also discuss how learning theories that encompass students' needs and pedagogical strategies can further prepare teachers to use technology effectively. This discussion emphasizes that technology in and of itself is not the answer, nor is the instructional design found within. It is the combination of these two issues, intertwined with teachers' informed decisions, that can make technology more effective.

Methodology

This study was conducted by means of a triangulated approach that included interviews, observations and document analysis. Through the use of these research techniques, I pursued those themes that were pertinent to the use of instructional technology in foreign language learning and relied on the participants' own experiences and voices to provide a rich picture of how teachers used listening comprehension technology as a part of their coursework.

Interviews. Seven purposively selected foreign language educators, lab personnel and students at a western university, actively engaged in Spanish and/or French language learning that involved the use of technology, were interviewed. Each name was changed to maintain anonymity (Appendix). These individuals were selected because of their knowledge and/or experiences with listening comprehension technology and language learning. Their varied perspectives provided differing points of view, and even unforeseen insights into the current use of media with listening comprehension strategies at this particular university. Initially, I contacted four individuals who had both second language learning and teaching experience (A.J., Nina, Randy and Jerry). Through their interviews, I obtained the names of three additional individuals (Debbie Kay, Max, Frances) who added a student's voice to this study. I had prepared questions available to me but did not strictly adhere to them since, more times than not, the interviewees provided responses to these questions or discussed unanticipated topics without prompting. I remained unbiased throughout each interview and accepted

each participant's remarks openly. Member checks ensured that what the interviewees said indeed reflected their true beliefs. Once all interviews were completed, they were transcribed into the computer and were coded for closer analysis.

Participant Observation and Document Analysis. In addition to the interview process, I placed myself into the shoes of the students and explored how it felt to complete a French video assignment in the lab setting. Since this process occurred upon completion of most interviews, I could observe more acute issues as discussed by the participants and could more closely examine the French video assignment. During my observation, I took notes and subsequently coded and combined this information with the coded interviews for further analysis.

Data Analysis. As I collected data, I looked for consistent global themes, in particular information that highlighted the participants' experiences with and attitudes toward listening comprehension technology and activities. Upon completion of the transcription process, I more closely reviewed the transcripts numerous times to identify further unanticipated patterns. The identified information was numerically coded and organized based on themes that were more deeply analyzed to reveal any further subtleties. As different themes emerged, they were retained for discussion based on their relevancy to this article in either a supportive or a contradictory manner.

Overall, the interviews, observation and document analysis revealed the current strategies used with media-based listening comprehension activities at this particular university. The information clarified the strengths and weaknesses of the pedagogical decisions made by teachers and provided the foundation needed to more holistically understand what teachers should know to make better use of technology-based L2 activities.

Results and Discussion

Technology-based listening comprehension has long been a part of language teaching. Needless to say, students have developed strong opinions toward these activities based on the media, the materials, the teachers' strategies, and/or the pedagogical goals applied. One group of students, for example, wrote a petition to stop testing on the listening material:

> I don't know if Nina [the teacher] had mentioned to you . . . but we were tested on the video in our

> course and ours was the class that like had a little petition and I think everybody in the class signed it... that said that we felt like the way that we were being tested on that was just not really fair or accurate or useful... (Debbie Kay).

Others reacted to their frustrations by selecting any response on the test just to be done with their "ordeal": "I mean I tell you I have no idea what I'd put on those papers. It would just say do it and I'd cross off anything and I'd get a grade for it so it didn't matter to me" (Frances). This class was particularly frustrated because assignments were made to use a technology over which they had no control, and which excluded pre- and post-listening activities.

Despite their feelings, the students were very much aware of the potential benefits of media-based listening comprehension activities for language acquisition:

> I can't see how you can't teach a foreign language class or have as much material as you can in the foreign languages because that's the closest at least I'm going to get to the immersion, to having it... and since I can't afford to get to France... that's as close as you can get... (Max).

Students were not negative toward the importance of these assignments. Rather, their negativity and frustration emerged when they sensed a lack of control over the technology and the material, absence of consideration of their needs, and absence of support and interaction in relation to the technology-based activities, each of which can be addressed and/or managed by the teacher. With this brief introduction, let us more closely analyze the prevalent themes of this study.

Technological Control. This first theme refers to students' control over the technology and the material presented. In this study, French students were required to watch video assignments in the lab setting. For these students, their inability to stop and review a looping video inhibited their learning:

> So, to have it running on a loop where you have no control and you just have to sit there and listen and I mean... the only control I guess you have is if you've got the time to sit there and just watch

> it over and over again . . . but still, you see it once and then you've got to wait fifteen minutes before the one [segment] you need comes back again ... and then if you didn't get it again then you have to wait another fifteen minutes before the one comes back again . . . since you can't stop it and check the answer or write down something, start it again, I don't see how beneficial it is (Max).

Similar problems emerged based on a teacher's strategy for presenting a video in the classroom setting: "Dr. Rigsby will present a videotape of a play in class but once class runs out, that's the end of the video and we do not complete it or discuss it" (Jerry). If frustrated by a tough passage, if discouraged by an unstoppable medium, or if inhibited by a strategy that excluded review of the material, the experience was insurmountable: "If you were lost in the first sentence, you were done, you were gone" (A. J.).

To understand students' experiences and frustrations with the uncontrollable, looping video, I went to the language lab and became a participant observer. In one particular example, I watched a video for second semester, beginning French students. I listened as attentively as possible to the material but found it quite challenging to understand while impossible to take notes; in one dialogue between a man and a woman, I understood nothing. If I wished to review the material, I would have to wait another 10 minutes for the passage to replay. Certainly, I was frustrated with the lack of control over the pace of the material and the inability to stop and review the clip as needed. Had I actually been a student receiving a grade for my work, my frustration may well have been greater due to the lack of control.

In an attempt to address this issue, the students insisted that the teacher review the assigned video clips. She, herself, was unable to comprehend the material: "She did take a look at the scenes that we had particular problems with and she was like, oh . . . this is terrible . . . I can barely understand what they are saying . . . " (Debbie Kay). Unfortunately, the teacher had not previewed the video prior to assigning it to the students and therefore had no idea of its difficult nature, much less the relationship of the material to the curriculum. She was, however, aware that students could not control the video on their own.

Research shows that the amount of control available to the students

can effect the level of comfort and security they feel (Garrett 1988; Lavine 1992; McGrath 1992):

> Learners usually have no control over the pace of the exercises... students listen and must perform at a pre-set pace which typically does not take into consideration their individual needs and skills. Consequently, many learners feel helpless and resentful. Reflective learners, who seek a slower, self-controlled rhythm and who want time to think and analyze before answering, are especially affected by this problem... unless students are working with individual copies of master tapes, they are completely subject to the pace regulated by the tape or the teacher. The imposition of a pre-set pace precludes student control. It not only diminishes motivation, but compounds students' already high level of anxiety (Lavine 1992, 1361).

When students are unable to use meta-cognitive strategies to manage the presented information, cognitive strategies such as note taking or even interaction strategies to help them better understand the material, then transference to other activities is less likely (Chamot 1995; Chamot and Kupper 1989). When students have little control over the listening comprehension technology, either in the classroom or the lab setting, this can increase their level of frustration and anxiety and can potentially hinder their learning (Garrett 1988; Lavine 1992; McGrath 1992).

Student Preferences. Students' voice and choice in what they view, hear or interact with can also have an effect on their learning (Garrett 1988; Jones Vogely 1998; Mayer 1997; Plass *et al.* 1998). Jerry wished to listen to audio recordings of French literary works because he believed that such a strategy would help him to better understand the material and hear the language in its purest form. However, his teacher would not support his interests since she did not know how to use technology-based materials in her courses. Others expressed interest in working with music-based listening comprehension activities (Frances, A. J.) including the Assistant Lab Director, Randy, who enthusiastically discussed a computer-based music program which would allow students to listen to songs of interest to them:

> It's a great program... but from the students point of view, you can pick songs that are really hot songs... songs that they are listening to on the radio . . . songs that Latins are listening to or Francophones are listening to that are part of the authentic culture and turn them into a lesson in half an hour... and be so much more inspiring because music means something to most students (Randy).

Despite these positive views, the teachers did not use these strategies, technologies or materials in their courses thereby leaving students without a voice in their language learning. Why is this? A. J. argued that many educators are "married" to the textbook and rely solely on the published materials to satisfy the listening requirement. He suggested that if teachers could more effectively and efficiently use these and other materials and technological tools, they could then provide students with a variety of activities and experiences:

> You can use music, news reports, depending again upon the level... I think that this is something that can be done every day. And as you start exposing students to that more frequently . . . I don't think they will look at it as an appendage . . . it's something that's part of learning a language. And not only that, I think the great thing about videos and news items and music is that we all know as teachers that you cannot say that language is separate from the culture. And so, it's a great way of not only presenting . . . a way of trying to teach listening comprehension strategies but also a way of integrating that with the culture that they are trying to learn... (A. J.).

Students and faculty also sensed a lack of cohesion between students' needs or preferences and the materials themselves. Randy, for example, believed that the French video was "... weak, or at least is not terribly visually oriented. So, it's more in support of the audio than anything else" (Randy). Frances, who worked only with Spanish audiotapes, believed she would have benefited from a richer, more visual approach:

> Researcher: Do you think it would've helped if you had had pictures?
> Frances: Yeah, I think it would've, actually... visual cues always help.

Thus, the lack of adequate visual information within listening comprehension activities was viewed as unfair: "Some people are visual learners and I feel you are cheating people that learn that way by not providing that. Some people don't need it, some people do" (A. J.).

When we take learners' needs or preferences into consideration, greater learning often occurs (Pouwels 1992) because students can tap into material of interest to them or of benefit to their learning styles. Unfortunately in this study, students could not explore the material in a manner conducive to their learning style, nor could they choose to review multi-modal components that could enhance their aural comprehension. Students and teachers were also locked into the materials that accompanied the text and did not venture into potentially more supportive, interesting or stimulating materials and technologies.

Though decisions concerning students' needs or preferences are crucial to the success of listening comprehension activities (Garrett 1988; Lavine 1992; McGrath 1992), a teacher's support of the students' work and the inclusion of interaction in relation to technology-based assignments can also affect their opportunity to learn (Crook 1994; Garrett 1991; Jones Vogely 1998; Long 1987). Therefore, it is to these two themes to which we now turn in this discussion.

Support and Interaction. The typical strategy used by teachers in both French and Spanish was to assign listening comprehension activities without preparation or follow-up, except for the day of the exam. The teachers did not include listening comprehension activities in class, they did not prepare students to work with these materials, and they rarely discussed these assignments with their students:

> With the class that I took... we had no time... we were hurrying through the material so we didn't have time to listen, to do any listening comprehension activities really in the classroom. We had a lot of verbal exchange but we didn't have ... concrete listening comprehension guidance (Frances).

When exercises were incorporated into the classroom, their use was very limited. In one French course, taught five days a week, the teacher used the material twice during the entire semester:

> She has brought in the video itself and we have watched a portion of it. I think we did that for like two days about two weeks ago... but that was like only two days out of the whole semester and this class meets everyday (Debbie Kay).

Though the material was not discussed in class, the French language coordinator remarked that whether students liked it or not, the listening materials were required and that they would continue to be tested on them (Nina). Such a strategy in her Spanish class left Frances feeling "helpless, completely helpless, yeah ... like I was sinking... it was like sink or swim" (Frances). Her teachers would not discuss the materials in class either before or after the assignments were made:

> I felt it was a part of the course but I just... I mean in the sense that it was Spanish, but not in the sense that I was getting any help in it while in the classroom. Like, if we had any questions about it they'd be like well ask me after class. It wouldn't be like a whole, she wouldn't explain to the whole class or he wouldn't or both of them wouldn't... there was a worksheet that we had to do and we didn't get any feedback. She just checked off if we did it or didn't do it (Frances).

A. J. even remarked that the strategies he used as a teaching assistant diminished the importance of listening comprehension activities in the classroom: "I hate to say it but it was like an appendage in the department ... we have to do listening comprehension so we're going to designate that only for the lab..." (A. J.). When asked why such activities were absent from the classroom, Nina responded: "At this university, we are really deprived of contact hours ... we don't have a lot of time to do the videos [in class]" (Nina). Randy was very concerned about this lack of support and interaction: "It's got to be a part of the class right now that shows them yeah, if I do it this way I do better, I feel better, I get a better grade" (Randy). He suggested that the issue of time isn't completely out of a teacher's hands; perhaps teachers stress certain components of the language too much to the detriment of aural learning:

> It's this idea that we have to complete everything ... everyone is going to know some conjugations of the future subjunctive and the pluperfect because to have a Spanish course you have to have taught all of that. If I were able to wave the magic wand, I would say we're going to do present, preterit, imperfect, future and subjunctive and that's it... But in our third year, you're going to be able to talk and listen and understand all of those tenses 'cause that's what you'll hear... 98% of the time. Instead, they can't use even the present tense comfortably! So, I think that's where we are missing the boat. We're trying to include too much and we do it all badly... we should just do some well and listening should be a big part of that (Randy).

To Randy, the current approach to learning means that "... students come out of two years without being able to talk. And I think that's a real black mark on our field" (Randy).

Long (1987) has argued that language skills cannot adequately develop without proper reinforcement. Jones Vogely (Jones Vogely 1998) similarly discovered that students wanted more classroom interaction related to listening comprehension simply because: "Students reported feeling anxious when little or no class time had been devoted specifically to LC practice, which left them 'feeling incompetent and unprepared'" (Jones Vogely 1998, 72). The students needed to know if they understood the material presented; they needed more interaction with the material and feedback from the teacher. Unfortunately, many teachers believe that listening comprehension activities are "... extra, obligatory tasks that intrude upon an already full schedule" (Lavine 1992, 1360) and that technology alone will take care of the students' listening comprehension development. Therefore, as long as teachers consider these technologies and materials as supplementary or peripheral to the classroom, they will remain separate from the curriculum and will never reach pedagogical significance (Garrett 1991).

Throughout these interviews, I sought to gain the best understanding possible of the participants' experiences with technology-based listening comprehension activities. What I discovered was that students, teachers and lab personnel each had differing views

toward the problems with these activities in language learning (Figure 1).

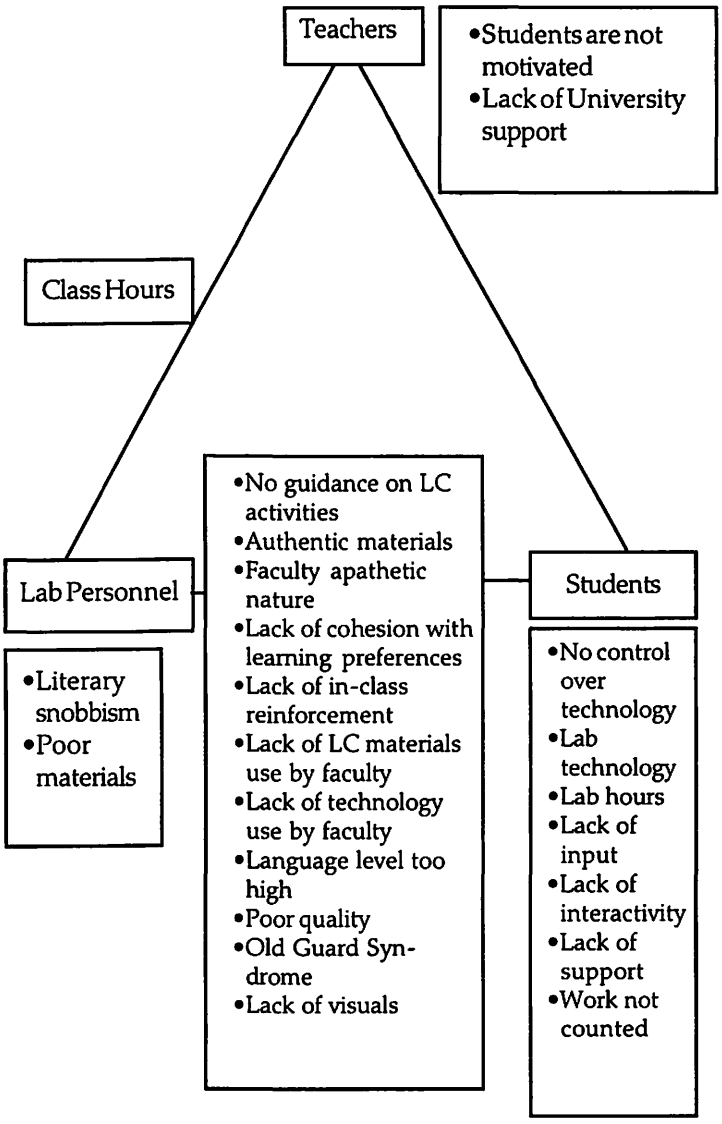

Figure 1: Views of teachers, lab personnel and students toward the ineffectiveness of litening comprehension technology in this qualitative study.

Students' frustrations were heightened because they could not stop and start the assigned videotapes and/or audiotapes as needed, they

could not choose what they wished to listen to, nor were their learning preferences and needs taken into consideration. They were also frustrated by the lack of discussion of the material and the lack of teacher support in the classroom setting. Though the lab personnel and students interacted with listening comprehension technology and materials more than did the teachers, the teachers were and are the central decision makers in the use of technology. Presumably then, teachers can best ensure that students are provided the opportunity to "proceed and succeed" with listening comprehension technology. Since the decisions that teachers make will affect students' learning, greater understanding of effective strategies for use of technology in foreign languages is needed (Crook 1994; Garrett 1991; Jones Vogely 1998). Based on the evidence obtained in this qualitative study, let us now turn to a discussion of several strategies that teachers should follow to ensure greater success with technology.

Teachers and Technology

Teachers are managers of their classrooms. They design their course curriculum, they introduce the material, they direct the classroom experiences and activities and assess students' learning. However, when it comes to using technology within the curriculum, many teachers have not been trained in how to use it effectively (Barksdale 1996b; Berne 1998; Carbonaro 1997; Myhre 1998). When a teacher is not conscious of or does not use effective strategies with technology, this results in poor performance, poor attitudes and/or frustration, as seen in the qualitative study discussed above. If a teacher is conscious of his or her students' needs, the technology and materials available, and has knowledge of sound teaching and technology theories and practices, students will have greater opportunities to succeed. Though numerous studies have reported the need to further address various individual teaching and technology strategies (Chun and Plass 1996a, 1996b; Crook 1994; Faerch and Kaspar 1986; Felder and Henriques 1995; Field 1998; Herron 1994; Hopey *et al.* 1995; Joiner 1986; Mayer 1997; Plass, Chun, Mayer and Leutner 1998; Pouwels 1992; Squires and McDougal 1996; Stone 1988; Wyatt 1984), a more holistic approach toward technology use must be encouraged for success in the classroom. Teachers must develop an understanding of students' learning abilities or preferences and language learning needs, and they must be cognizant of the course curriculum and content and how technological materials can help attain course goals and objectives. They must also be familiar with those pedagogical and theoretical strategies that will best enhance students' comprehension of the target language through the use of media. Admittedly, much of what follows may seem "old

hat". But, to those who have not been trained in the use of technology in teaching, this review, and for some this introduction of appropriate teaching strategies, may bring new teaching and technology perspectives to light. If we consider all of these intertwined elements, along with the technology and the design of the materials, we will better ensure that students can learn when technology is implemented into the course curriculum.

Addressing Students' Needs. Research has shown that when we take learners needs into consideration as a part of a technology-based learning process, learning is more likely (Carlson 1990; Chun and Plass 1996a, 1996b, 1997; Plass *et al.* 1998; Pouwels 1992). Thus, an awareness of how individuals differ can enhance the effectiveness of the technological tools and materials we use (Jonassen and Grabowski 1993; Reid 1987). Unfortunately, this is easier said than done. Language learners are each at a different level of cognitive processing; they each have different learning strategies, varied schema, experiences, needs and preferences that must be addressed. Within the different course levels, teachers have certain expectations of what their students can do. Therefore, some learners may have more difficulty with different technologies and materials because they are not prepared either for its content or for its unfamiliar functions; some students' cognitive abilities may simply demand different strategies.

So how do we approach these differences and needs? First and foremost, to provide more meaningful experiences and a sense of ownership in language learning, we must listen to our students, preferably through informal information gathering tools to accommodate the shortage of time available in the classroom. A. J., for example, suggests that teachers could "hand out a survey and find out what type of topics they are interested in then try to gear activities to their interests" (A. J.). This could easily be accomplished during any class period. A teacher might also evaluate the current strategies used with technology in the lab setting to see if students' needs and preferences are being accommodated. As described earlier, students often listened to tapes or videotapes without the ability to stop or review the material. Through discussion with students, teachers may well find a more meaningful and effective approach, such as to divide and present this material in controllable, logical chunks. This would allow students to stop and review segments of the material, thereby creating "... a clear, logical flow of events so that linking (remembering) new information to old is facilitated" (Meskill 1996). As such, faculty must communicate with lab staff and relay to them

the needs of the students and their curriculum so that greater control and more meaningful experiences with the technology and materials can occur.

Though it would be more helpful to determine students' cognitive abilities through testing, such a strategy would prove to be time consuming and costly. Instead, a teacher could provide alternative strategies to accommodate the different cognitive styles that are typically present in a classroom (Ausburn and Ausburn 1978). For example, some students have strong visual abilities and could benefit greatly from a visual component coincided with the aural information. For those students who struggle to hear the language, accompanying visuals may well help them process the aural input:

> Visual support not only makes the topic more accessible to listeners who are more visual or spatial learners but also helps all listeners to relate personally with the topic, thus reducing the anxiety that can occur when they think they don't know what's being talked about (Jones Vogely 1998).

Paivio's (1971, 1986) Dual Coding Theory provides a theoretical explanation of this enhanced learning. It states that two separate systems within our cognitive makeup process information, a verbal system that holds incoming verbal information and a nonverbal (or visual) system that holds images and sensations. When verbal and visual information are presented contiguously, a student develops verbal mental representations of the information in the verbal system and visual mental representations of the information in the visual or nonverbal system. Though these two systems are independent, learning is more likely when visual and verbal information are presented simultaneously. Students can build referential connections between the mental representations of the two types of information that have been presented, they can retain their new knowledge longer and can perform better on transfer tasks related to the contiguously presented material (Clark and Paivio 1991; Mayer and Sims 1994). Mayer's (1997, 2001) Generative Theory of Multimedia Design further suggests that "...meaningful learning occurs when learners select relevant information from what is presented, organize the pieces of information into a coherent mental representation, and integrate the newly constructed representation with others" (Mayer 1997, 4). That is, if a student is a visual learner, their learning may well be enhanced if they are able to choose from

visual or textual information that supports the listening comprehension activity at hand. As such, the student would select and connect pieces of non-verbal and verbal knowledge to engage the cognitive processes necessary for learning. With the ability to meaningfully select words and images from the material, to organize them into coherent mental representations and to integrate the verbal and visual information with one another, the process would not only benefit their listening comprehension, it would also alleviate some of their many frustrations (Jones and Plass forthcoming; Mayer 1992, 1997, 2001).

Even if we cannot easily determine our students' cognitive abilities, experience tells us that our courses always include students with different backgrounds and needs. Thus, our knowledge of the technology available, our awareness of the potential for learner differences and preferences in the classroom, and our flexibility in the pedagogical strategies used can help us to better accommodate our students when they are learning with technology.

Addressing Curriculum Needs and Technology. To support the learner, we must also be knowledgeable of the curriculum and the technology-based materials we use in our courses. We must know the content of the materials, the context in which they are to be used and how they relate to the topic of discussion. We must understand how the technological material relates to the goals and objectives of the course curriculum, or how the level of the material presented compliments the students' language abilities. To examine their relevancy, we must preview the materials and determine if they can indeed help students attain the goals and objectives set forth in the curriculum (Heinich, Molenda, Russell and Smaldino 1999). Familiarity with the materials before their use in the classroom setting will better ensure that disappointing or embarrassing results are avoided.

Determining the appropriateness of software, Internet sites, or video and audio materials is particularly challenging when such materials are not a part of the textbook itself. One way to evaluate their appropriateness is through predictive evaluation, which is the assessment of the quality of media materials before they are used with students (Squires and McDougall 1996, 147). Simply put, our best evaluative information comes from our own firsthand experiences and examination of the materials in question (Hopey *et al.* 1995), not to mention our own firsthand knowledge of our curriculum, our students and ourselves. Predictive evaluation is also most effective

when we integrate educational issues and media usability into one single evaluation format, a strategy that provides an in depth analysis of a media component (Squires and Preece 1996). For purposes of predictive evaluation of technology and foreign-language media-based materials, a teacher would need to consider the following:

Setting Where will the material be used? Are facilities and equipment readily available for its use? Will anything prevent students from adequately accessing the material or equipment?

Context In what context will the technology and materials be used? Does the material relate to the course goals and objectives? Does it relate to the course curriculum and its teaching strategies? Remember, any evaluation will be subjective since numerous external inputs may cause the context to vary from class to class, teacher to teacher.

Cost effectiveness Can a particular technology-based tool be used in more than one class or language level? Remember, the more applicable the material is to different levels and courses, the more "cost-effective" it will be.

Interactivity Are students given an opportunity to actively interact with the media and materials to enhance their learning? The idea behind this is quite simple: "Interaction activities in educational settings not only maintain learners' attention and increase their involvement on learning tasks, but also result in better performance on knowledge and/or skills (Lee, Choi and Byun 1996, 416)." Do the technology-based materials invite students to interact with the material rather than passively work through the information?

Instructional Strategies Does the material in question complement our teaching strategies? Does it disrupt the teaching process? Is it adaptable or flexible for our teaching activities?

User Friendliness of Documentation Does the documentation help us install and set up the material? Is the instruction accurate? Does it address the equipment needs? Does it tell us how to use the program and/or materials?

User Interface and Control with Computer Software Some learners will be unable to adequately navigate in hyperspace because they are not cognitively prepared either for its content or for its unfamiliar functions. In other words, "...the program must facilitate moving about, finding things and control appropriate to the task and level of the user" (Rathbun and Goodrum 1994, 686). Is the program easy or difficult to navigate? Are instructions provided? Is the navigation

appropriate for the level of the students?

Feedback Does the software application (or a workbook for another form of media) provide feedback? Is the feedback demeaning? Is it helpful, informative and/or supportive?

The Students Is the material appropriate for the students? Does the program meet their needs or can we adjust it to suit their needs? Are varying levels and strategies present to address the various skills and needs among students?

Triangulation Triangulation, in this instance, refers to obtaining the view points of multiple teachers and students, the various stakeholders in the learning process (Rathbun and Goodrum 1994). In this light, teachers could have students work with the material and focus on their reactions to and feelings about the material in question (Hopey *et al.* 1995).

This is by no means an exhaustive list of evaluative questions. Nevertheless, with guidance and clear cut attributes present in an evaluative methodology or tool, foreign language faculty would be able to adequately choose those attributes most relevant to their given situation and/or context to help them determine the appropriateness of different media and materials for their curriculum.

Addressing Pedagogical and Theoretical Strategies. Previewing, pre-listening or for that matter pre-surfing material, as termed advance organizers, helps students to access their prior knowledge of the topic and thus prepares and guides them through the learning process (Berne 1995; Herron 1994). Therefore, it is not enough to assign students a technology-based activity without some initial preparation, information or guidance. Students need help and support so that with their prior knowledge, they can begin to construct new knowledge from the material. A. J., both a graduate student and teacher, offered an example of the successful pedagogical strategies he used when introducing Latin American music to his students:

> Before giving them the exercise, I'd explain to them the artist of the week... and I would talk a little about the background. The students had a handout with a little bio and then I would hand out a sheet with the lyrics to the song. I would tell them not to turn it over. And then I'd play the song for them by the particular artists and they would just

> listen. Again, they were not exposed to the fill in the blank sheet at that point. They were to listen once through the whole song and then I'd tell them to turn the sheet over the fill in the blank sheet. Again they were instructed just to listen and try to follow along with the sheet. I would stop the tape, rewind it, play it a third time. Before I played it, we would review ser and estar, the verbs to be in Spanish . . .so then they would be instructed, listening the third time, to try and fill in the appropriate verb ser and estar. And then, if need be, I'd play it a fourth and a fifth time and then depending upon the class, the sixth time we would sing the song together . . . (A. J.)

A. J. incorporates three crucial stages of technology use into his teaching strategy. He 1) prepares the relevant materials, 2) prepares the environment and 3) prepares the learners (Heinich, Molenda, Russell and Smaldino 1999). Materials such as particular questions, statements or related visuals, would serve as advance organizers to prepare students cognitively for the activity to come and therefore more effectively explore the material using any form of technology (Berne 1994; Herron 1995). Teachers could prepare questions that would engage students in discovery learning, group work, fact-finding missions, and knowledge expansion or knowledge construction. Whatever the approach used, the teacher would need to ensure that the materials would be ready for discussion with students during the appropriate class session.

The teacher would also assist the learning process by adequately preparing the environment. For example, if the teacher wished to work with the materials in the class setting, he or she would need to ensure that the proper equipment or Internet connection was ready and available. For that matter, the teacher would need to ensure that the lab had the necessary equipment and materials available for students to complete the assignment. Much of this preparation would again entail communication with the lab staff to make sure that the needed technologies and materials are indeed present

Preparation of the learners completes this cycle. Here, the teacher would present and discuss the advance organizer information with students to prepare them for the upcoming activities and would provide students with the questions and pertinent handouts necessary to better guide them through their learning. The teacher would

also remind students of their various resources for accessing the material (lab or home, for example); he or she would ask students to complete the activities within a reasonable timeframe and would discuss how they would present their newfound knowledge.

Overall, this is a much more effective approach than having them work with the technology and materials without preparation. However, we need to go one step further in our use of technology. In other words, "its got to be a part of the class right now that shows them yeah, if I do it this way I do better and I feel better; I get a better grade" (Randy). This entails supporting students' efforts and needs in the classroom by providing for interaction *in relation to* the material. Crook (Crook 1994) stresses that when we assign students technology-based materials, this means that follow-up discussion or collaboration should occur in the classroom *in relation to* the activity that students complete in the lab or at home. Students discuss their new knowledge with each other; they share their thoughts concerning the material in question, and heighten each other's potential level of development. Thus, on the date the assignment is due, teachers should provide students opportunities to share the information they have learned in class through participation in group discussions, individual or group presentations or creative activities, or through discussion of the questions or activities assigned to them.

Certainly, interaction is a pedagogically and theoretically sound strategy whereby students and certainly even teachers work together on technology-based tasks to help students construct meaning (Crook 1994; Faerch and Kaspar 1986; Pica, Doughty and Young 1986; Vygotsky 1996). In the qualitative study reviewed earlier, several participants understood the advantages of working together on listening comprehension activities:

> I see advantages in that they can help one another try to work through the process and they can help each other deal with the frustration of listening and, particularly if they have a role model there of somebody that knows a little more, they can see through that person that hey...if that person can get it, I can get it too (A. J.).

Frances shared the success she felt when the class completed an in-class listening comprehension assignment together:

> There's something that they did one time and it

> was with music and that actually, it kinda helped. He brought in this tape of miringué (*sic.*) music and this guy was singing about drugs and how they're bad . . . so we all figured it out . . . it was a whole class effort and that I think helped a lot (Frances).

She also believed that purposeful interaction with others while working *at* or *with* the technology would have helped her past problems with comprehension:

> If you have a problem with understanding something, you turn around to your friend and say "what did they say". I don't know if that's really going to help you, but in certain instances, if there's some problem, I mean, if they're speaking too fast and you have no way of knowing, maybe you can get your friend to slow it down, to say it slower (Frances).

Engaging students in collaborative activities *in relation to* the given technology has positive implications for students because "pupils often learn more from these socially organized tasks than they do from tasks tackled in solitary working arrangements" (Crook 1994, 146). When we provide some form of interaction while working with technology, this may well make the information more accessible to the students (Joiner 1986; Wyatt 1984). When we use any form of technology (audio, video, CALL, the Internet) we should therefore invite students to interact *with* and *in relation to* the material rather than to passively work through the information provided. Used in a thoughtful manner, technology will give students more opportunities to interact with the target language and enhance their learning potential (Armstrong and Yetter-Vassott 1994).

Addressing Teacher Training. Listening comprehension material "...must become an integrated part of the curriculum rather than an exotic activity separate from 'regular' work if it is to have any significant effect" (Garrett 1991, 9). If technology-based activities remain separate from the classroom, they will be of little benefit since students will continue to view them as afterthoughts and insignificant activities. But a part of making them a regular or more accommodating fixture in the classroom entails training teachers to use such materials effectively. Current and future teachers need to

be more effective decision makers in terms of technology use in language education. For new teachers, many institutions of higher education now offer pedagogy and/or methodology courses that emphasize language teaching and discuss the use of technology in the curriculum. Several institutions have also developed technology courses and programs for language graduate students to teach them how to develop and implement their own materials into their language courses. It is certainly this author's hope that the material introduced or "re-visited" in this article is a part of any course syllabus that emphasizes technology. For those who are already teaching, valuable learning can also occur by reading literature or participating in workshops that touch on the steps needed to effectively use technology in language learning. Plans are currently underway within our own foreign language department to develop an in-house certification program to teach current professors how to develop and use technology in their courses. During each Spring semester, teachers will complete a series of 6 workshops which include the material reviewed in this article as well as hands-on web development training. Work on an interactive web site, complete with sound and Java Script interactive activities, will continue over the summer months so that each participant will have developed sound, technology-based materials to use in a given language course by the fall semester. During the Fall semester, teachers will implement their materials into their course or courses and the effectiveness and impact of their newly developed tools will be evaluated. Thus, the trend towards training current and future teachers in effective use of technology is underway. Our task as language educators, lab directors and instructional technologists is to ensure that such training continues.

Conclusion

For years, we have assigned students the task of working with technology-based materials. With listening comprehension activities in particular, students would presumably focus in on the aural material and would develop their ability to hear, understand and eventually speak the language. However, several issues have long jeopardized success with listening comprehension activities, many of which surround a teacher's decision-making strategies. As a result, a more holistic review has been presented to highlight the many elements needed to make students' learning through technology a more successful venture. Though these individual elements are not new, it is pertinent that we review their importance and take on a more inclusive approach to them to more richly ensure that our students have an opportunity to learn when working with any form of media.

Admittedly, this study is limited to a particular western university that represents but a single scenario of what is and is not working within their language program. Indeed, not all universities are like this one and some are doing what is presented in this article on a regular basis. Nevertheless, we must continually remind ourselves and our colleagues that sound strategies as applied to listening comprehension technology must be an important part of the classroom experience to help students progress with their listening comprehension and language development. If we could only stop "hearing" our students' concerns and frustrations and start "listening" and effectively responding to them, I believe that we would find solutions to the current frustrations which inhibit language learning and development. We should strive to use meaningful, thoughtful, and holistic planning, implementation and follow-up strategies whenever we use technology in L2 teaching. We must decide why we have students use a particular technological tool, what we expect students to learn and to do, and how they might achieve their goal as a result of their interactions with the material presented. A teacher's decisions and strategies have just as much to do with the success of technology as does the equipment and the materials provided. If teachers take on a well-rounded approach to technology use, such a strategy will not force students into a vicious cycle of frustration and failure, but rather, will invite them to explore and learn more.

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Appendix

Participants

Debbie Kay is a 22 year old undergraduate who is enrolled in a first year, accelerated French course which meets every day. She is studying French in hopes of using the language in her future career as an international lawyer. She enjoys learning languages.

Max is a 25 year old graduate student who is enrolled in the first semester of second year French. He is pursing his Ph.D. in Comparative Literature and has previously studied both French and Spanish. He describes himself as an aural learner. He plans to learn additional languages and use them in his future as an educator at the collegiate level.

Frances is a 22 year old undergraduate who is enrolled in a first year, accelerated Spanish course which meets every day. She plans to teach English as a Second Language (ESL) and is taking Spanish to better understand what it feels like to study a second language. She describes herself as a visual learner.

A.J. is a 27 year old Ph.D. student in Educational Linguistics. He has a BA and an MA in Spanish and has taught collegiate level Spanish for three years. His goal is to become a Basic Languages Coordinator for Spanish and to develop his knowledge of foreign language instructional technology. He has a tremendous amount of experience and expertise in foreign language learning.

Nina serves as the Basic Languages Coordinator at a western university and serves as the coordinator for French Teaching Assistants in the Department. She has little education in the area of second language acquisition, foreign language pedagogy and technology use in the classroom. However she has gained useful information through on the job experience and discussions with fellow coordinators across the country.

Randy serves as the Assistant Director of the Language Lab at a western university. He has a BA in Latin American Studies and began working in the lab as an undergraduate and then as a faculty member. He has co-presented numerous workshops across the country on multimedia design in foreign languages and is currently a member of several national organizations related to language learning and technology. He has collegiate level teaching experience in Spanish.

Jerry is currently a graduate student of French who has experience teaching French at the collegiate level. He is learning about foreign language technology, and continues to pursue graduate level French courses in his Master's Program. ◆

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