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**EXPANDING OUR CLASSROOM WALLS:
ENHANCING TEACHING AND LEARNING THROUGH
TECHNOLOGY**

Key words: online-cyber environment, electronic teaching materials, technological tools, Internet searching, effectiveness of technology, student-centered learning, learning style, learning objectives and standards.

The factors motivating the use of technology to enhance language teaching are considered: the trend in language practice toward the use of more technology; the technological experience of language students and the principles of student-centered learning theory. The key components for effective implementing technology are also discussed.

A wide range of factors supports a decision to incorporate technology into language teaching. These factors range from theoretical to practical and from pedagogical to professional, but two factors are particularly important: trends in teaching and learning practice, and technical experience of language students.

Most modern students have used computers both in class and at home since their early elementary school days, leading them to expect technology to play a role in their higher education as well.

Use of computers and the Internet in education settings has increased significantly since the early 1980s. Increasingly, the Internet use is becoming part of the undergraduate education experience. For example, during Winter Semester 2014, Belarusian State University (Minsk) reported that more than 80 % of its undergraduate students utilized the online course software. College students find the Internet central to their educational experience, using it to communicate with teachers and other students, to research and to access library materials, and to handle administrative tasks like reporting absences [4].

The Internet has also changed the way students approach their education. For example, while students used to depend on the campus library for the majority of their research needs, today's students opt for Internet searching, with almost three-quarters using the Internet more than the library and slightly less than 10 % preferring the library. Because these trends are escalating in secondary and undergraduate education, more and more language students will enter university expecting, if not demanding,

that professors incorporate technology into their courses. This trend will increasingly be true as more and more undergraduate universities incorporate technology into their curricula.

The third and perhaps most important reason to consider implementing technology into language education is that the advent of e-mail, instant messaging, and readily accessible Internet browsing has influenced the way students learn. Students who regularly use these technologies expect their learning to be more "hands on" than passive ("they expect to try things rather than hear about them"), and they tend to learn more visually and socially. Because of their familiarity with the Internet and the way it "links" information, today's students expect and learn best from information presented in a "non-linear, dynamic, and interactive way [6]." The online-cyber environment presents information in multiple formats, such as text, pictures, video, and graphics, and allows users to link information from various locations throughout the Internet seamlessly and dynamically. This connectivity, and students' experience with it, has changed the way students conceive of information and learn from it.

To more fully understand how technological advances impact learning, it is useful to consider a short summary of learning theory, focusing particularly on learning styles and student-centered learning principles. Learning has been described as the "process of progressive change from ignorance to knowledge, from inability to competence, and from indifference to understanding." The way learners progress through the spectrum from ignorance to knowledge is often referred to as a learning style. In his leading work on learning styles, educational theorist James W. Keefe defined learning style as "characteristic cognitive, affective, and psychological behaviors that serve as relatively stable indicators of how learners perceive, interact with, and respond to the learning environment [5]." While learning style is likely to be relatively stable throughout a person's life, it is not unalterable and often must be adjusted to enable the student to learn in a less than ideal environment.

Learning styles are affected by a number of characteristics, including a person's intelligence, personality, information processing mechanisms, social interaction needs, and instructional preferences. The deepest layer of learning style theory focuses on personality models. Learning style at the personality level tends to be the most stable throughout a person's life. The second layer assesses how students process information while learning. The third layer is behavioral and focuses on how students interact in learning

settings. The fourth layer explores learner's instructional preferences – the ways in which they like to be taught. The four levels are not isolated since each influences the others.

Although learning style is linked to the individual student, understanding the concept of learning style is arguably as important to the teacher, and its application can dramatically improve teaching, especially when the teacher attempts to incorporate technology into class activities. Traditional theories of education were based on the model that teachers, as repositories of information, were simply responsible for dispensing that information to their students. If a student did not learn the material, it was viewed as the student's fault entirely. That teaching paradigm did not include adapting teaching style to facilitate learning when students failed to learn; students alone were expected to adjust. With the introduction and acceptance of learning style theories, this paradigm has shifted, and overall education is improving – beginning with the individual student's recognition of how he or she learns and progressing to the teacher's ability, if not responsibility, to adjust teaching style to best facilitate learning.

Although understanding and adapting teaching to accommodate different learning styles is advisable, taking the concept to the extreme can be detrimental. If students are allowed to learn using only their preferred style because it feels comfortable, they can be seriously hindered in their ability for future learning and development. Students can, and should, learn to use different learning strategies, but they are most comfortable with assignments within their learning style preference.

Another important objective of true education is to incorporate the principles of student-centered learning.

Student-centered learning is based on four main premises [2].

The first premise posits that learners are self-directing, meaning that they prefer to make their own decisions and manage themselves rather than having the will of the teacher imposed upon them. Thus, learning is enhanced by mutual inquiry by student and teacher. One means of including self-direction is by providing flexibility and options when possible, thereby allowing individual students to decide for themselves the option that works best for them. Flexibility that allows the student to be self-directed enhances learning and is perfectly suited to learning activities that involve technology. Students can use technological learning tools at their own pace and often can self-select the sequence and timing of their learning.

The second premise of student-centered learning is that learning occurs best experientially. Students learn most efficiently and effectively when material is introduced sequentially – taking the student step-by-step from simple concepts through complex concepts while relating those concepts to the students' experience. Students encounter more learning difficulties when new information is presented without such context. The best way to provide context is to begin with an overview of the material to be presented and to end with a summary of how it all fits together. But it is not enough to provide a context solely within the scope of the material to be covered in class; learners need a framework tied to information or experience already within their grasp in which to place the information they receive. With such a framework the learners can see how each individual skill or concept fits into the overall structure or "big picture" that extends beyond the scope of the course itself and how it fits into their existing experience. In fact, a key to successful adult learning is the use of examples or questions – small and insignificant as they may seem – that cause students to examine their experience and recall a context into which new information can be placed. Electronic materials, particularly those posted on Internet sites or on internal course pages, allow students access to such context and examples. Technological tools are well-suited for providing background information and other "big picture" summaries that do not require extended discussion.

The third premise of student-centered learning is that the student must be "ready to learn." Curriculum must be timed to coordinate the subjects or skills taught with the concurrent tasks facing the student. Students learn best when they understand the importance of material they are learning and see that it is linked to performance that is expected of them in their social role. They must be motivated to learn, and that motivation comes from a belief that what they are learning is relevant and important to their lives – both short term (in preparing for and succeeding in the current course) and long term (in their professional lives). Again, technological tools are particularly well-suited for point-of-need learning. Certainly in-class teaching is important and necessary, but out-of-class access to supplemental materials online can aid students at their point of greatest need – when they are truly "ready to learn."

The final premise of student-centered learning concerns the concept of orientation to learning, which stresses the presentation of material in the context of problems students are likely to face in the "real world"; thus,

instruction becomes problem-centered rather than subject-centered. The use of technology in so doing is merely an added component of the "reality."

By keeping the fundamental concepts of learning style and the four premises of student-centered learning in mind when implementing technology, faculty will better serve their students and enhance learning. For example, because students are familiar with "surfing" the Internet, they gravitate toward course information placed on class websites. When teachers post course information on the Internet rather than (or at least in addition to) providing such materials in hard copy, students benefit because they can access the information from a distance at any time they find necessary (so long as the students can connect to the Internet), thus accommodating student schedules and learning styles. Technological tools can provide a "visual architecture" for the class through course outlines, posted assignments and dates, Power-Point lectures, sample assignments and answers, additional references, tutorials, and other online components [3].

Providing handouts and other materials online in advance can also improve class discussion and make class time more effective. Materials using graphics, video, audio streaming, and online simulations can supplement traditional class content and vastly improve the learning of visual and kinesthetic learners. In addition to catering to students' preferred learning styles, faculty can use technology to encourage or require students to use different learning styles and skills by implementing print, graphical, and experiential components in their teaching. Along with formal course materials, less formal online services, like online writing centers, can encourage students learning and adapt to different learning styles. Further, because students' learning appears to be influenced by the fluid and connected nature of online materials, students are arguably more likely to understand complex concepts and relationships when presented online. Online exercises, readings, and discussion forums help students assess their own understanding of course concepts. Technology can provide an effective way to present information outside class, but when using technology in such a way, teachers must be sure to involve students and establish a dialogue about the information (either in a class setting or through technological means like e-mail or electronic discussion boards) to avoid establishing a passive / dependent learning style. Faculty can help enhance individual understanding through e-mail, online discussion and conferencing, and other communication technologies to expand course dialogue beyond the

finite class period. Technology can also encourage students to take part in self-reflection and self-evaluation and can provide structure for students who need structure while leaving flexibility for others. Finally, since technological activities allow students to work at their own pace, students who quickly master concepts and skills can easily move forward while students who struggle can spend additional time and access additional resources and feedback. All of these supplemental materials can be used at the students own pace and on their own time schedules, while increases both the students' abilities to internalize the material as well as their satisfaction with the learning process itself [1].

While technology can definitely contribute to student learning, it is critical for teachers to have a sound reason for using particular technologies in their courses. It is not enough to use technology for its own sake, either because it is new and exciting or because it may enhance learning in general, because, when used improperly, technology can actually hinder student learning. Instead, each technological application needs to have a specific purpose, must meet a specific educational need or learning objective, and should be suited for that objective. Hence, a teacher should not simply use PowerPoint because he or she has it on the computer or because he or she wants to try something different.

Technology helps students improve performance when it directly supports some concrete learning objective. Therefore, learning objectives and standards must be clear to the students for technology to be effective. Some technologies are better suited for some learning activities and objectives than others would be. Technology can be used to change educational activities, but unless the activities themselves are effective, adding technology is not likely to change the outcome; therefore, the effectiveness of technology is more accurately a measure of the effectiveness of the activity.

Effective planning for implementing technology involves three key components. First, faculty members must determine the academic goals – the educational goals or outcomes – the faculty members want students to achieve. Articulating academic goals and learning outcomes requires faculty members to assess the needs and expectations of the students, the faculty, and the larger institution. Second, faculty members must determine what activities or resources will help students reach those goals. This evaluation should not be tied to particular technologies, but instead should focus on what the student needs to do or to access to achieve the desired outcome.

Third, faculty members then determine which technologies are appropriate for those activities or resources. It is only at this point that the faculty member should consider "the role technology could play in improving those activities."

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