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Integrating Technology in Guatemalan Schools

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With an increase in donations and grants available for technology integration, even schools in remote areas of the world have greater access to technology than ever before. However, as the experience in integrating technology in the United States has shown, the availability of technology doesn't always equate to its effective pedagogical application. Nevertheless, there has been little research concerning the successful process of integrating technology into education in areas of the world that have not had significant previous contact with technology. The purpose of this study is to identify problems and perceptions of teachers in developing countries as they begin to use technology so that an effective integration process can be determined. The sites chosen for this study were schools in Chimaltenango, Patzicia, and Momostenango, Guatemala. The schools are operated by the Rose Education Foundation, an organization based in Provo, Utah, dedicated to providing high quality education in remote areas of Guatemala. While the schools are private, enrollment is controlled parallel the socioeconomic situation of the country. Thus the students and teachers come from a wide range of ethnic and economic backgrounds. Subjects for the study were adult, Guatemalan teachers employed by the Rose Foundation.

To begin this project, a number of technology resources were provided to the schools before the beginning of their semester. These resources included donated computers to form computer labs, a satellite internet connection, and basic technology workshops. The teachers then began their normal semester of classes with the technology tools available. At the end of the semester (about 4 months later), the teachers were provided with additional training. At that time a survey was conducted asking the teachers to reflect on their experience with using technology during the semester. They were also asked to provide suggestions for other teachers beginning the technology integration process. Several teachers were selected at random to be interviewed about their use of technology in the classroom.

Results

Overwhelmingly, the teacher attitude toward technology use was very positive. Every teacher that participated in the survey stated that technology enhances education and that they plan to use it in the future, even though many of those teachers also reported frustration when using technology. In addition 86% said that technology helped teach concepts more effectively and 84% said that technology allowed them to teach concepts that they would not be able to teach otherwise. Complete survey results are shown below.

Technology Survey Results

During technology integration, who uses the technology?	8%	11%	81%	n=36
	teacher	students	both	
The main factor limiting your use of technology is due to a lack of...	59%	21%	20%	n=34
	resources	training	time	
Experienced technical problems	36% no		64% yes	n=36
If problems were experienced, were they resolved?	67% no		33% yes	n=21
Technology enables concepts to be taught that could	16% no		84% yes	n=38

not be taught otherwise.

Technology enables concepts to be taught more successfully.	14% no	86% yes	n=36
Technology is a waste of time.	95% no	5% yes	n=40
Technology causes frustration.	89% no	11% yes	n=36
Technology is applicable to the subject.	5% no	95% yes	n=41
Technology is applicable to the age of students.	5% no	95% yes	n=40
Technology requires more time than it's worth.	14% no	86% yes	n=35
Technology costs more money than it's worth.	25% no	75% yes	n=36
Using technology improves education.	0% no	100% yes	n=42
It is important that students learn to use technology	0% no	100% yes	n=45
Will use technology in future teaching	0% no	100% yes	n=45

As part of the survey, teachers who had used technology in their classes were asked to describe how the technology was used. Several teachers showed that they had successfully integrated technology into their classes. One teacher said, “We’ve used different software about natural sciences to observe and increase knowledge about plants and animals. Also, we used word processors to write reports.” Another teacher, who used technology with a class studying advertising said, “my students made advertisements, their presentations were made in PowerPoint.” The majority of the teachers, however, reported using technology in a way that was not completely integrated to the content of their class. Many teachers made comments such as, “The students wrote a summary of a topic in [Microsoft] Word, changing the color of the letters, they added images and they printed it.” Another teacher said, “I’ve had my students go to the internet and investigate some topic that I tell them, and I ask them for a summary [of what they’ve seen].” Both of these examples show technology being used in the classroom, but focus on the technology tool instead of the curricular purpose for using the technology. This shows that technology is often considered a useful topic, but one that is not necessarily related curriculum content. This observation does not invalidate the teacher’s use of technology, it simply reflects that the focus of technology was more on it’s use than on it’s integration.

Teachers were also asked to reflect on what resource was the most helpful to them as they used technology with their classes and as they learned to use technology for themselves. By far the most useful resource was access to the internet, both for classroom use and for personal training. The main frustration for the teachers was the speed of the computers and the internet connection. Teachers suggested that it would be better to have fewer computers that were more “up-to-date” than many computers that were older. Another obstacle identified was the issue of trust in the people providing technical support. One teacher stated that “lack of trust” was the major obstacle that kept them from using technology in the classroom.

Conclusion

During this study, several key issues became apparent for planning future technology integrations in areas where teachers have had little previous experience with technology. First, the most important resource that can be provided is access to the internet. This would suggest that if funds are limited, other technology needs should be placed as a lower priority to that of getting a connection to the internet. Second, a distinction should be made early on as to the difference between teaching technology as a separate topic and integrating technology into the

curriculum. This may help to make it easier for teachers to avoid teaching *about* technology and to begin teaching *with* technology. Third, it is not necessary to spend time or other resources in the process of “selling” the idea of technology in education. This study shows that the concept is already commonplace among teachers, even in remote areas such as those in Guatemala.

Finally, it is important to develop a trust between the technology support staff and the teachers during the initial stages of the implementation. Based on the participation in the program, it was clear that there was great excitement among the teachers as to the idea of using technology in their classes. It is important to build the trust while there is still a high level of excitement.

Follow up

During the course of this study there were a number of issues outside of the scope of the study that warrant future research. First, there was a wide range in responses as to the obstacle that keep the teachers from using technology. Many teachers said that they did not have enough equipment; others said they did not have enough time, and others said they didn't have enough training resources. Even though the reaction was varied, all of the teachers had the access to the same resources and time allotment. This would suggest that these were perceived differences, more than actual differences. It may be that certain teachers feel as if they never have enough resources, while others will always feel that they never have enough time to work with technology regardless of the resources or time provided.

Second, the role of trust in successfully integrating technology is a question that would be important to address more fully in future studies. This concept has great implications for instructional technology in all settings, not just that of remote countries. It suggests that in order to insure a successful implementation of technology, more emphasis should be placed on building user trust, not just solving technical problems.