

## **The Role of Incentives in Facilitating the Integration of an Online Learning System into Pedagogical Practices: A Human Performance Technology Perspective**

Jing Lei<sup>1</sup>

School of Education  
Syracuse University  
Syracuse, NY, USA  
Email: [jlei@syr.edu](mailto:jlei@syr.edu)

Blaine Morrow  
Palomar College  
San Marcos, CA, USA  
[bmorrow@palomar.edu](mailto:bmorrow@palomar.edu)

**Abstract:** This paper summarized findings from an empirical study that evaluated the effectiveness of a technology incentive project, MEET, on facilitating the adoption of a web technology CCC Confer among college instructors. Results show that teachers' technology adoption can be facilitated by providing certain incentives. A number of strategies were essential to the effectiveness of this incentive project: (1) Involving teachers in the decision-making process to make the technology integration project meaningful to them; (2) Helping teachers to develop a well-designed plan with realistic goals and a feasible implementation outline; (3) Building a collegial community from where teachers can learn from peers, obtain support from their social-networks, and work collaboratively; (4) Leading with strong leadership to ensure high morale, sufficient resources and support that are indispensable to the successful implementation of a technology project; and (5) Providing timely support to help teachers remove roadblocks. Restraining factors included insufficient critical appraisal, the absence of collaborative projects, and few face-to-face meetings. Specific implications for technology integration are discussed.

### **Introduction**

The slow adoption of technology in education has been a serious concern of educators and researchers (Berliner & Biddle, 1995; Tyack & Cuban, 1997; Cuban, 2001; Zhao, Pugh, Sheldon, & Byers, 2002; etc.). Researchers have asked questions such as "Why is greater access not translating into better classroom use?" (Cuban, 1999) and "What factors affect technology use in schools?" (Zhao & Frank, 2003).

According to Harless (1978), for any human performance problem, there are three possible causes: knowledge/skill deficiency, environmental barriers, and motivation/incentive. Researchers have made great efforts from the first two types of

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<sup>1</sup> Corresponding Author

causes to solve the “technology puzzle” (Cuban, 1999). For example, from the angle of knowledge/skill deficiency, researchers have investigated what teachers need to know in order to use educational technology (Margerum-Leys, & Marx, 2003; Zhao, 2003; Urban-Lurain, 2003). To explore what environmental barriers impede technology integration in schools and how to remove these barriers, researchers have explored how technologies are used in schools (e.g., Ager, 1998 ), why technologies are not used in schools (Cuban, 2001; Schofield, 1995), what conditions influence teachers’ technology use (Zhao, et.al, 2002; Becker, Ravitz, & Wong, 1999; Harris & Grangenett, 1999; Honey & Moeller, 1990), how technology innovations are integrated or rejected (Bruce, 1993; Cuban, 1986; etc. ), and how technology innovations transform and are transformed by existing practices (Bruce, Peyton & Batson, 1993; Schofield & Davidson, 2001).

However, the third type of causes - motivation/incentive problems - has largely been left untouched. Although providing incentives for technology integration is a practice used in many technology integration projects (e.g, Corcoran, 1995; Poole & Moran, 1998; Zucker & McGhee, 2005), few studies have investigated whether incentives work, what incentives work, and how.

This study explores the effectiveness of an incentive project that was designed to motivate college instructors to integrate a specific online learning technology innovation into teaching. This project, the MEET (Modeling Effective Educational Technology) project, was designed to reward innovative uses of the CCC Confer e-conferencing technology, field-test e-conferencing for instruction, develop re-usable instructional content, and foster a community of learners and users. CCC Confer is an online communication service which supports free e-conferencing technology for all community college faculty and staff in a large state. Although this project had been used extensively for administrative purposes, it had rarely been used by instructors and students for instructional purposes. To improve the use of the CCC Confer technology for teaching and learning purposes, the MEET project awarded grants to 20 instructors in the state community college system based on evaluation of 70 applications, with \$2,000 per participant as the incentive and the requirement being to use CCC Confer to complete specific instructional projects.

This paper reports findings from an empirical study that investigated the effectiveness of this incentive project in improving the use of CCC Confer among college faculty. The major questions include: 1) How effective was the incentive project MEET in facilitating faculty integration of this particular technology? 2) If it worked, how?

## **Methods**

Data were collected from all project participants through the duration of this project. Data were collected through two avenues: surveys and interviews.

The same survey was administered twice, once at the beginning of the project and once at the end of the project one year later. The survey included the following aspects: Demographic information; technology-related factors (technology ability, interest and

experience with technology, attitude toward technology, and belief about technology); pedagogical practices and beliefs; investigation of current E-confer/technology use; knowledge and experiences with CCC Confer; and plans for (or results from) participating in the MEET project.

The interviews were conducted at the end of the project in March 2006. All 20 participating faculty and the CCC Confer central team members were interviewed individually. The interviews were designed to obtain an in-depth understanding of participating faculty’s opinions, thoughts, experiences while participating in this project, and their reflections on these experiences. The interviews included questions on their experiences of participating in this project, the factors that made this project work, and the local impact of their participation of this project. Each interview lasted for approximately 20 minutes.

**Results and Discussions**

Based on results from both survey data and interview data, this section briefly summarizes the effectiveness of the incentive project MEET in facilitating faculty integration of CCC Confer and how it worked.

*The outcomes*

*The increased usage of CCC Confer*

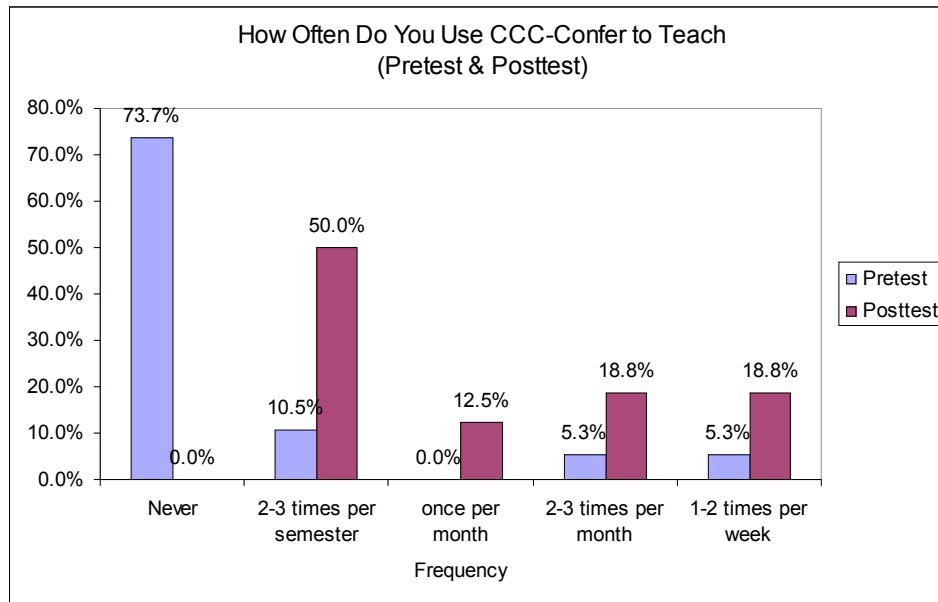


Figure 1. Change in the Usage of CCC Confer

The use of CCC Confer for instructional purposes has significantly increased among instructors who participated in this grant project. Before participating in this project, nearly three quarters of the instructors (73.7%) had never used CCC Confer. After participating in the MEET Grant project, all participants used CCC Confer for

instructional purposes. Half of them used CCC-Confer at least 2-3 times per semester, 12.5% of them used it once per month, 18.8% of them used it 2-3 times per month, and another 18.8% of them used it once or twice per week.

*The different uses of the technology innovation*

During the duration of this project, the instructors used CCC Confer for a number of instructional activities:

*Presenting content online.* Participating faculty members used CCC Confer to incorporate live, interactive content presentations, hold online office hours, and engage with students during live, online tutoring sessions. For example, Faculty M organized an online book club to engage students in active reflections of required readings. Instructor R found that students were benefiting from the available technologies during her online office hours.

*Class management.* All participating faculty reported that they used CCC Confer to support the processes of teaching and learning. It helped Instructor S to build a positive sense of community at the beginning of the semester. In addition, instructor S was able to use the CCC Confer technology to determine roster additions, sort students into teams and create an archive that could be viewed at any time by students who missed meetings.

*Exploring new ways of teaching.* Participating faculty members were also using the technology as a platform to pilot new teaching materials and collect data and feedback. The collected data and feedback were then used to modify the piloted materials. One of the projects was to develop student tutorials used for online math tutoring sessions supporting an online math class. The faculty member first designed and developed the math tutorials, and then video-recorded live practice sessions. The video recordings were then used to modify and evaluate the tutoring scenarios based on the progress of practice.

*The role of the MEET Grant project in promoting participants' use of CCC Confer as a teaching tool*

To examine the role the MEET Grant project played in increasing participants' use of CCC Confer, we asked participants to rate their degree of agreement with a series statement on a scale of 1 to 5, with 1 being "strongly disagree" and 5 being "strongly agree". The overall average ratings and standard deviations of all statements are listed in Table 1.

As Table 1 shows, participating in the MEET project greatly affected these faculty members' use of technology in their teaching career in various ways. A major reason is that participating in this project gave them the opportunity to explore with technology, with a rating of 4.94 out of 5. This finding echoes previous research findings that in order for teachers to learn about technology and integrate technology into teaching, it is critical to provide time and opportunity for them to explore on their own (Burbules & Callister, 2000; Zhao, Frank, & Ellefson, In press).

**Table 1.** MEET Grant as an Incentive Promoting the use of CCC Confer Technologies as Instructional Tools

Statement	Mean	SD
The MEET grant provides me with the opportunity to explore with technology.	4.94	0.24
The MEET grant is worthy of my time and effort.	4.94	0.24
The MEET grant motivates me to be innovative.	4.82	0.39
The MEET grant provided me an opportunity to innovate.	4.82	0.39
The MEET grant motivates me to integrate technology in my teaching.	4.76	0.44
The MEET grant connects me with colleagues who share similar interests with me.	4.53	0.80
The MEET grant influences the way I teach.	4.47	0.51
The MEET grant helps me locate resources I need in my work.	4.35	0.79
Winning the MEET grant helps with my career.	4.18	0.81
Winning the MEET grant gained good notoriety for me.	3.82	0.95
Winning the MEET grant earned respect for me.	3.71	0.91

The statements on whether winning the MEET grant affected the participants in positive ways (help with career, good notoriety, and earned respect) received comparatively low ratings and had high standard deviations. This suggests that there was considerable variation in the local context of different campuses. Winning a technology grant may earn a good reputation for one grantee and have a large impact on one campus, but may simply go unnoticed on another campus. The different local contexts may have different impacts on local technology integration.

#### *How did it work*

The MEET incentive project proved to be a successful endeavor for researchers seeking to understand effective processes leading to successful integration of technology into educational settings. Providing money as incentive was important, but money alone was not sufficient for successful technology integration to happen. Data revealed that a number of factors were also critical in this process:

*a) The initial training session.* The Initial training and social event, a 3-day retreat, played an essential role in the implementation of the MEET project. During this retreat, the participants were trained on the use of the CCC Confer technology. The training helped the participants familiarize themselves with the technology, experiment with the different functions, and explore different ways this technology could be used for different instructional purposes. They formed small groups to refine and finalize their technology integration project plans, and built a community of learning. Participants reported the importance of developing a well-defined project plan with clear project goals and specific steps during the training.

*b) Building a community: supporting and learning from each other.* Meeting innovative colleagues and establishing a network of educators that used the technology in innovative

ways was yet another key aspect to the MEET project success. After the initial meeting, the instructors used a Yahoo Group for group discussions and held online quarterly meetings. This community provided a safe place for participants to find support and advice from specialists and peers, share ideas, and seek help in accomplishing project goals. 76.5% of the participants viewed the online discussion messages as “very much helpful” to them.

*c) Strong leadership.* Strong leadership has been identified as a key factor in technology integration endeavors (Lei, 2005). The MEET project had great leadership which served as a motivator and spearhead for the project through on-going support and help during times of success, frustration and project plateaus.

*d) Timely technology support.* Another vital element was technical support. CCC Confer had a skilled, personable, and professional support team that handled technological hiccups and user errors deftly and without delay. When there were technology glitches, the tech support team was readily available, highly knowledgeable and very supportive. Having a competent, responsive technology support structure was a necessity for technology integration into learning.

## **Conclusion**

In this paper, we have summarized findings from an empirical study that evaluated the effectiveness of a technology incentive project, MEET, on facilitating the adoption of a web technology CCC Confer among college instructors. Results show that teachers’ technology adoption can be facilitated by providing certain incentives. As the result of this incentive project, the use of this web technology among participating instructors increased significantly, instructional materials were developed and disseminated, new pedagogical methods were explored, and a sense of community was established and maintained. A number of strategies were essential to the effectiveness of this incentive project: (1) Involving teachers in the decision-making process to make the technology integration project meaningful to them; (2) Helping teachers to develop a well-designed plan with realistic goals and feasible implementation details; (3) Building a collegial community from where teachers can learn from peers, obtain support from their social-networks, and work collaboratively; (4) Leading with strong leadership to ensure high morale, sufficient resources and support that are indispensable to the successful implementation of a technology project; and (5) Providing timely support to help teachers remove roadblocks. Restraining factors included insufficient critical appraisal, the absence of collaborative projects, and few face-to-face meetings.

Findings from this study suggest that (1) incentives are necessary to facilitate teacher technology integration. Technology innovations are constantly being introduced to schools and teachers are expected to adopt them. However, teachers, no matter in K-12 settings or higher education settings, are busy with their regular working load. It may not be reasonable to expect them to spend their own time and use their own resources to learn the constantly changing new technologies. An incentive project, be it monetary reward, nonmonetary support, technology resources, or some kind of recognition, can help a

potential technology adopter locate resources, remove roadblocks, and be encouraged to experiment with technology innovations. (2) School technology specialist should work with teachers to develop a workable and reasonable plan, help them locate resources, anticipate challenges, and identify where to find help when something (technical or nontechnical) does not work. (3) For successful technology adoption to happen, all issues must be addressed: environmental barriers, knowledge and skills, and incentives. In addition to providing incentives, other factors must also be addressed, including strong peer connections, ongoing support from peers and experts, and strong leadership.

In addition, we must recognize that the impact of any incentive project is limited. To reach more potential adopters, the innovative participants in the incentive project need to play a more active role to introduce and advocate for the new technology innovation. Their exemplary use of the technology innovation can provide valuable opportunities for potential users to increase their awareness of this technology, develop interest in knowing more about this technology, make value judgment about its cost and benefit, and eventually to try it out and to adopt it.

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