Professional Development: Incorporating an Organic Approach to Information and
Communication Technologies (ICT) Teacher Training
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Abstract

The purpose of my action research was to teach volunteer colleagues how to incorporate information and communication technologies (ICT) into their educational practices. An organic approach was utilized to train project participants how to create engaging educational content using Prezi presentation software. Personalized ICT professional development goals, and one-to-one individualized training sessions were found to be key factors to the 79% success rate of the ICT training. Personal interviews and surveys of the project participants revealed a need for our school to schedule time and provide adequate compensation for future ICT professional development. Based on the success of this project, the Administration scheduled time for future ICT training sessions, and adequate compensation of future participants was arranged.

Introduction

The emergence of Internet based information and communication technologies (ICT) in the 21st century has profoundly affected human social structures. The ability to function as a productive member of society has become increasingly more dependent upon the acquisition of ICT skills, which have given individuals distinct employment advantages, and an increased likelihood for a successful and satisfying life. Educational institutions around the world have evolved in response to ICT, as they have recognized their professional responsibility to teach students ICT skills (Davis, Preston, & Sahin, 2009; Meyer & Marsick, 2003). However, teaching ICT to students has also necessitated that schools retrain faculty to incorporate ICT into their classroom practices, and this has often been a difficult task.

The Impact of ICT on Education

The growing impact of ICT, with regards to institutes of education and pedagogical practices, has been well documented (Davis, Preston, & Sahin, 2009; Meyer & Marsick, 2003). Significant discoveries in neuroscience, the proliferation of the Internet, and the development of advanced ICT have changed educational perspectives around the world (Bell, 2011; Brown 2002). Meyer and Marsick (2003) studied the impact of ICT on higher education. The authors revealed a growing tendency for college students to gravitate away from the classroom toward preferred modes of e-learning instead. Meyer and Marsick (2003) also concluded that educators, in order to maintain relevance in a digitized environment, must not only be trained to provide students with adequate ICT skills, but they must also be prepared to teach students to synthesize multiple viewpoints and think creatively as well, skills that are best taught within the context of the teacher-student interaction that occurs in a classroom setting.

In *How Are We Going to Transform Education* (2011) a panel discussed the growing concern amongst University educators that students had become increasingly less able to think holistically and infer broad connections in the generalized context of a multidimensional world. The panel concluded that the digitization of modern society had produced students that perceive information in a fragmented manner described as "clip consciousness" (*How Are We Going to Transform Education* 2011, p. 41). These findings were similar to those found by Sappey and Relf (2010) who reported the impact of ICT on traditional academic roles and practice. Although Sappey and Relf (2010) delineated multiple areas of ICT's positive impact on the educational process, they cautioned that technology alone could potentially marginalize the teaching process leading to deficient learning. Therefore, teachers must be trained to integrate technology into the classroom in meaningful ways that should be based on a learning model that blends current neurologically based learning theories (Sappy & Relf, 2010).

Overcoming Obstacles to ICT Faculty Development

Digital multimedia tools have consistently been shown to improve the educational experience of learners across all types of intelligences (McCoog, 2007; Schrand 2008). Miller (2004) studied ICT implementation in secondary schools concluding that the majority of educators had not yet become aware of emerging technologies and the significance of ICT as an effective means to enhance learning. In addition, Keengwe, Kidd, and Kyie-Blankson (2008) found that even though faculty professional development efforts had become increasingly more focused on ICT training, the successful integration of technology as an educational tool in the classroom was hindered by a "general resistance to the adoption and integration of computer tools into instruction" (Keengwe et al 2008, p. 23). Other researchers similarly concluded that obstacles to ICT implementation in pedagogical practices not only existed, but that these obstacles were both pervasive and global (Davis et al, 2009; Koster, Dengerink, Korthagen, & Lunenberg, 2008).

Koster et al (2008) examined the effectiveness of ICT professional development focusing on the teacher educators leading training sessions. The authors determined that the success of faculty ICT development programs was dependent upon the level of technological expertise amongst teacher educators that frequently had very little, or even no, prior exposure to ICT training methodologies. Koster et al (2008) also analyzed the success of the Association of Dutch Teacher Educators ICT certification program which revealed that ICT teacher educator programs could achieve success when participation was voluntary, participants were allowed to self-assess their needs and set personalized goals, and teacher educators worked collaboratively with each other through the formation of ICT teacher educator support groups. Davis et al. (2009) examined ICT professional development also finding that adequate training of ICT teacher educators was a critical aspect of successful ICT teacher training programs.

Davis et al. (2009) also concluded that the nature of the ICT training program adopted by an institution was the most significant factor in determining whether or not an ICT professional development program was to be successful, irrespective of the efficacy of the teacher educators involved. Specifically, the authors compared Computer-Based Training (CBT) programs, which utilized on-line, standardized coursework designed by off campus, private institutions, with

organic training programs that incorporated face-to-face on campus training sessions, allowed teachers to set personalized technological growth agendas, and encouraged teachers to work collaboratively and support each other. Davis et al (2009) reported that although CBT had some limited success, most CBT program participants surveyed disliked the impersonal nature of CBT, which tended to leave them uninspired to complete the ICT training. Davis et al (2009) further found CBT to be completely ineffective in training teachers with limited incoming ICT skills, as technological glitches and Internet connectivity issues often became overwhelming. After analyzing their data, Davis et al (2009) were able to show that the organic approach was far more effective than CBT with strong statistical significance.

      Keengwe et al (2008) also researched ICT faculty development focusing on the relationship between ICT professional development and ICT implementation in the classroom. The authors identified organizational support, faculty leadership, training of on-site teacher educators, and long term commitments to faculty professional development as critical factors determining whether or not an educational institution was able to successfully integrate ICT into the classroom. Keengwe et al (2008) also presented evidence indicating that most educational institutes lacked strategic long-term plans for ICT development, focusing primarily on the acquisition of state-of-the art technology that rarely found its way into the pedagogical practices of classroom teachers. Keengwe et al (2008) also identified common obstacles to ICT adoption, which included factors such as inadequate hardware and software, absence of long-term professional development strategies, and lack of financial and/or other incentives for faculty; but even more importantly, the authors concluded, "It is critical to identify the gap between the technology vision and its present situation. Closing that gap will then become the focus of planning for ICT adoption" (Keengwe et al, 2008, p. 26).

Project Rationale

      Teachers at my learning environment had been directed to start incorporating ICT into their course content; yet very few of them, including myself, had been able to do so. This was mainly due to two reasons. First of all, the faculty's resistance to technology had slowed the pace of ICT adaptation.   And secondly, our school had never provided any significant ICT faculty development; so many teachers were just simply unaware of the nature or existence of web 2.0 tools. The proposed solution was, therefore, to provide effective ICT professional development to teach faculty/administrators how to produce engaging ICT enhanced educational content.

Inquiry Question

      Can an organic approach to ICT professional development successfully teach faculty/administrators at my learning environment to produce engaging, ICT enhanced, educational content?

Target Audience Details

The target audience of this project was a group of 14 upper school faculty/staff members at my learning environment, Crossroads School for Arts and Sciences in Santa Monica, CA. The participants' ages ranged between 34 and 61 years, with a mean age of 47.8 years. Ten of the participants were full-time faculty members, and the other four were the Head Librarian, two Deans, and the head of the Upper School IT Department. The group was comprised of 5 females and 9 males. Teaching experience of the participants ranged from 10 to 40 years with a mean of 22.1 years. Subject areas taught by the target audience include Latin, Mathematics, Science, Computer Science, English, Music, Film Studies, Life Skills, and History.

Methodology

This project was conducted to satisfy the graduation requirements of the Master of Science Degree program in Education, Media, Design and Technology (EMDT) from Full Sail University in Winter Park, Florida. The project followed a two-cycle action research protocol designed to test the efficacy of an organic approach to ICT professional development.

Implementation Process

The goal of my AR Project was to utilize organic ICT faculty development strategies to teach my target audience how to develop engaging, ICT enhanced, educational content. The literature reviewed revealed that an organic approach to ICT faculty development was the most successful way to teach educators how to incorporate ICT into their pedagogical practices. The organic approach required that participation was voluntary to increase the likelihood that project participants were motivated; and that the goals of the ICT professional development were self-determined by each individual participant to maintain relevance. The organic approach also necessitated that the training took place on-campus with preferably face-to-face individualized instruction.

During Cycle 1, project participants attended a single two hour training session to learn how to create Prezi presentations, how to find relevant web 2.0 tools, and how to use a learning management system (LMS) to provide a platform for the posting of student projects for peer review, evaluation, and publication to the global community of learners. Schoology was the LMS utilized for this project. After the initial faculty development seminar, teacher participants were given 4 weeks to find a relevant web 2.0 tool, teach themselves how to use that tool, create a Prezi about their chosen web 2.0 tool, and post their presentation on Schoology for peer review by the other participants of the project. The goal was to meet for a second faculty development session after the Prezis were complete to allow participants a chance to provide summative feedback to one another regarding their Prezi presentations. Then, at this 2nd meeting, participants were to select a new technology from the ones posted on Schoology, and the chosen web 2.0 tool would be the taught to all the participants during the 2nd Cycle implementation by the faculty member who first presented the tool to the group.

The second cycle of the AR project started in the 5th week of the project. It was originally intended that the second cycle would be led by the faculty member chosen at the end of the first cycle; the intent being that the chosen faculty member would teach the rest of the project

participants how to use the web 2.0 tool they presented on the Schoology website during the first cycle. However, the first cycle did not end as planned, so the second cycles' goals needed modification. Personal interviews with project participants led to the determination that participants would only be required to produce a single Prezi presentation providing educational content for direct use in the group member's teaching and/or administrative duties. The second cycle was also modified in that I began to instruct participants privately rather than as a group. The second cycle ended with a final group meeting where the participants shared their Prezi presentations for peer review. This final meeting occurred nine weeks after the project began.

Results

Cycle 1

In Cycle 1, project participants were asked to find a web 2.0 tool with relevancy to their educational duties, learn how to use the tool, and then make a Prezi presentation about their chosen web 2.0 tool to share with the other participants through the Schoology LMS platform. When the end of Cycle 1 arrived, only one out of fourteen (14%) of the participants had completed their Prezi and posted it on Schoology. I immediately realized that modifications to the implementation process were needed. Individual meetings with each participant were arranged; and through the conducted post-Cycle 1personal interviews I found that 93% (13/14) of the project participants had trouble finding the time to complete the work I had asked them to do, and 100% (14/14) of the participants asked me to drop the Schoology requirement wishing to focus solely on their Prezi presentations during the second Cycle.

In addition, 90% (9/10) of the faculty participants wished to only produce course content with their Prezis, and 75% (3/4) of the administrator participants wanted to focus solely on making Prezis to aid in their various administrative duties. None (0%) of the participants wanted to find and learn new web 2.0 tools for this project. During these interviews, 79% (11/14) of the participants requested that I work with them individually, rather than as a group, to help them complete their Prezis. And finally, 100% (14/14) of the participants agreed that it would be helpful if I gave them a fixed completion deadline, provide weekly reminders of the deadline, and utilized several checkpoints during the Cycle 2 implementation to help them stay on task.

Cycle 2

Cycle 2 began in the 5th week of the project with significant modifications from my original plans. The most important changes implemented for Cycle 2 were that I decided to allow each participant to focus solely on producing a single Prezi presentation as they desired, and I began training each participant individually rather than as an entire group. During pre-Cycle 2 personal interviews, I helped each participant re-define their overall goals of the ICT professional development training I was giving them; and then based on the participant's desires, we worked out individualized plans for the Cycle 2 implementation. For the second cycle, I also implemented several checkpoints to make sure that the participants were focused on their endeavor as they had asked me to do. By the end of the second cycle, 11/14 (79%) of

the participants had successfully completed their Prezi presentations.

Post-Cycle 2 surveys revealed that 100% (14/14) 0f the project participants, including the three participants that did not complete their Prezi presentations, found Prezi to be a worthwhile, engaging technology; and they all planned on using Prezi in the future to produce more educational content for use in their teaching and/or administrative duties. The ten faculty participants (100%) being trained were also planning to encourage their future students to learn and utilize Prezi as an alternative to other presentation software such as PowerPoint and Keynote. Prezi was reported to be "challenging" to learn at first by 71% (10/14) of the participants, but much easier to use once they "got it".

Every participant (100%) stated that being trained individually enabled them to understand Prezi much quicker than the group instructional approach; however, 36% (5/14) of the participants expressed that the individualized approach reduced the "collaborative feel" of the project. And lastly, 100% (14/14) of the participants expressed interest in further ICT faculty development; however, they all believed that based on this voluntary training experience, the school needs to provide in school time and/or adequate compensation for full faculty participation to occur.

Insights

Cycle 1

The pre-survey data I collected showed that the 14 participants of the study had an average age of 47.8 years with an average of 22.1 years of educational professional experience. These demographics are indicative of a generation gap when it comes to knowledge and familiarity with 21st century computer based technology. The younger less-experienced teachers at our school seem to have relatively few problems incorporating ICT skills into their course content as they have grown up in the digital age. The majority of the participants began their teaching careers long before the advent of the Internet, so it makes sense that teachers of the elder generation are the one that need the most help in learning ICT skills.

My pre-survey data also showed that the fourteen participants strongly believed that learning ICT skills was part of their professional duties, and that teaching ICT skills to their students was an important task given the nature of our digitized world. The literature reviewed concluded that ICT faculty development achieved the greatest levels of success when the program was voluntary, as teachers will retain their professional development training only if the knowledge being taught is deemed beneficial to their professional growth. Based on the pre-survey and personal interview data collected, it seemed that my 14 participants were all highly motivated to learn 21st century technologies.

The literature reviewed also suggested that ICT faculty development was most successful when teachers were allowed to create their own professional development goals and choose what it was that they wanted to learn in order to maintain relevance. In the post-Cycle 1 interviews, most participants wanted to simply focus their efforts on creating educational content for their students, and expressed that they were not interested in learning other web 2.0 tools as

I had asked them to do. This led to modifications in my Cycle 2 implementation. Personal interviews in the two weeks following the end of Cycle 1 led to the conclusion that even when teachers are motivated to start learning 21st century technologies, "incentives" and "time" were more important factors than having "desire to learn" and the "freedom to choose" what one learns during ICT faculty development.

Cycle 2

The Cycle 2 data supported the research reported in my Literature Review, which indicated that an organic approach to ICT professional development was the most effective way to teach faculty/administrators about 21st Century technologies. The organic approach required ICT training to be voluntary, and that participants develop their own personalized ICT professional development goals. The literature reviewed showed that participants trained with this organic approach were more highly motivated to complete ICT training because the development process maintained relevance to the individual participants involved. The success rate of my Cycle 2 implementation increased to 79% (11/14) after I helped the project participants develop their own professional development goals during the pre-Cycle 2 interviews.

The Literature Review also showed that individualized instruction was more effective than group instruction for short-term ICT development goals; however, a collaborative approach, where group members worked together providing both formative and summative feedback, was determined to be the best way to foster long term success as participants tended to form support networks with their peers. The Cycle 2 data was consistent with these findings, as switching to an individualized approach resulted in a 72% increase in the Cycle 2 success rate. Cycle 2 modifications enabled project participants to work with me individually to complete Prezis based on their individualized professional development goals. Working privately with individual project participants increased their confidence, which led 79% of the participants to the successful completion of a Prezi presentation by the 9th week deadline. Allowing participants to set their own professional development goals increased the participant's motivation, which led to the development of many fine Prezi presentations.

Conclusion

My Action Research Project was designed to provide colleagues with effective information and communications technologies (ICT) faculty development. Following the *organic approach* outlined in my literature review, I provided training to 14 co-educators about Web 2.0 tools focusing on how to create Prezi presentations. By the end of Cycle 2, 11/14 (79%) project participants completed a Prezi presentation to use as educational content supplementing their teaching and/or administrative duties. My AR Project was therefore a resounding success.

Davis et al (2009) and Keengwe et al (2009) determined that an organic approach to ICT professional development incorporating face-to-face on-campus training sessions with volunteer participants was the most effective way to train teachers/administrators how to utilize 21st century educational technologies. Koster et al (2008) found that allowing professional

development trainees to set their own ICT professional development goals was an essential element of the organic approach. The results of my AR Project confirm these findings.

The first cycle of my AR Project ended with only one out of fourteen participants completing a Prezi presentation. Post Cycle 1 interviews revealed that the project participants felt that they were asked to do too much based on their already busy schedules. In Cycle 1, participants were to learn Prezi, find a relevant Web 2.0 tool to use in their professional duties, learn how to use that Web 2.0 tool, make a Prezi presentation about their chosen Web 2.0 tool, and then post their Prezi on Schoology for peer review. Although project participants were free to choose whichever Web 2.0 tool they found useful, they were not truly given the freedom to develop their own ICT professional development goals. This reduced motivation levels of the participants, which resulted in only 1/14 (7%) of the participants completing the Cycle 1 goals.

The Cycle 1 post-interviews also revealed that participants felt that group ICT instructional sessions provided were inadequate, and that they would benefit far more from private instruction. This was consistent with the findings of Davis et al (2009) that found private training more effective than group training, even though group instruction tends to encourage a collaborative approach to ICT training, which has long-term benefits.

Based on the post-Cycle 1 interviews, I made significant changes to the Cycle 2 process. I lowered my expectations allowing teachers to focus solely on creating a single Prezi presentation with content relevant to their self-determined professional needs. Furthermore, I met with all participants individually, as often as needed, to help them achieve their individualized goals. This new approach led to a 79% success rate (11/14 participants completing Prezi presentations) confirming that an organic approach to ICT faculty development is indeed an effective means for educational technology training.

The initial goals of my AR Project had to be modified as *time* turned out to be a limiting factor in the ICT teacher training process. In the post-cycle 2 survey, I asked project participants for summative feedback, eliciting their thoughts on how future ICT professional development sessions could be improved. Since all 14 colleagues found it difficult to volunteer their time to participate in my project, 100% agreed that future ICT development should be arranged, but also that the Administration must provide both adequate time and compensation to enable the training to take place efficiently and effectively.

In our final Cycle-2 meeting, the Headmaster, Assistant Headmaster, and Upper School Director joined the project participants as we watched each other's Prezi presentations. We asked the Administration to schedule ICT faculty development time as part of our regularly scheduled hours in the upcoming school year, and expressed the need for the school to provide adequate compensation for our efforts. I am quite pleased that not only has the Administration agreed to provide time for ICT faculty development starting next year, but they also agreed to compensate us for our time as well.

Through my efforts to introduce Prezi to my colleagues, several of the group participants, and I, taught our students how to use Prezi as well. At the end of the year, many members of the Crossroad's community were praising the beautiful Prezi presentations our students made for their final projects. Considering that only one year ago Prezi was non-existent on my campus, I am ecstatic about the effect my AR Project has already had at my school

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