

Professional Development for the Empowerment of Today's Teachers: Emerging Technologies

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Abstract

Teachers are in the process of learning to adapt to teaching in a technologically mediated environment, wherein they make use of technological tools that enhance the quality of instruction. In face-to face, online, or blended learning environments, teachers need to use other means of reaching out and communicating with students. The 21st century presents itself with technological challenges (emerging technologies), and opportunities for the students, and it is important for the teachers to reach them with the tools that speak to the students. Professional development is a platform that can specifically educate teachers regarding the efficacy of emerging technologies that can be woven into instruction to make it more interesting, interactive and collaborative for students. The purpose of this position paper is to emphasize the need for effective training of teachers in the use of emerging technologies that can significantly improve teacher-student communication in the diverse educational environments.

Keywords

Professional Development, Blended Learning, Face-To-Face Classes, Podcasts, Vodcasts, Voicethread.

I. Introduction

Preparing and supporting both face-to-face and online teachers to meet the diverse student needs is vital for the success of learning. In this process of learning, teachers are trying to adapt their teaching practice to a technologically mediated medium, by making use of the technological tools that enhance the quality of instruction. Teachers need to use other means of reaching out and communicating with their students and one aspect of technology that can be harnessed is emerging technologies. One cannot undermine the role of technology in the 21st century and the need for trained professionals that will serve as facilitators in diverse educational settings. The purpose of this position paper is to emphasize the importance of training teachers in the productive and effective use of emerging technologies both in the face-to-face and online settings. This paper addresses diverse tools that can be used in the online and face-to-face classroom, for which most current teachers lack significant training and that would facilitate their practice while providing them with a sense of empowerment.

II. Emerging Technologies

Veletsianos (2010) defines emerging technologies as, 'tools, concepts, innovations, and advancements utilized in diverse educational settings to serve varied education related purposes' (p.17). He further adds to this definition:

- (1) may or may not be new technologies
- (2) can be described as evolving organisms that exist in a state of "coming into being"
- (3) experience hype cycles
- (4) satisfy the "not yet criteria of"
 - a. not yet being fully understood
 - b. not yet fully research or research in a mature way
- (5) are potentially disruptive, but their potential is mostly unfulfilled (p.17).

According to Pacansky-Brock (2012) emerging technologies fall in one of the four categories: cloud based applications that can be stored online and can be assessed anywhere with the internet availability; Web 2.0 tools that have simplified the process of creating and sharing multimedia content; social media, whose capabilities have made communication an interactive and collaborative process as well the usage of mobile apps. Both

these definition stress on the immense potential and usability of emerging technologies in educational settings confirming two important aspects:

- 1) the need to equip teachers with the knowledge and usability of emerging technologies in their teaching both through teacher preparation and professional development
- 2) the need to select and use those emerging technologies that may be usable (access and affordability) and to research and realize the potential of the still evolving organisms that need to "come into being"

Teaching effectively with technology, in both the contexts first and foremost requires that the teacher understand the benefits and limitations of the technology. The teacher who teaches face to face needs to be aware that he/she is no longer a "a sage on the stage", but has to effectively transform his /her persona and take on a role of "a guide on the side" (Palmer, 1998). It means that the teacher should be aware of the challenges that comes with teaching with technology especially incorporating the online elements in their teaching. Both the challenges and the demands of the 21st century make it imperative that both the face-to-face teachers and online teachers are trained and given support towards this end. Educators have to keep in mind that they reach out to the students with the tools that speak to them and integrate them in their teaching practice. One such platform that can address the needs of teachers is teacher preparation and support. Teacher preparation could be pre-service training or in- service training also called professional development wherein both types of teachers are trained in emerging technology sessions; sessions that are specifically designed to address the efficacy of emerging technologies and their use for online students specifically.

III. Conceptual framework: Knowles Adult Learning

The conceptual framework that applies to the target population of this position paper is based on an andragogic approach to adult learning. This framework is very pertinent to teacher preparation and professional development as it puts the onus of responsibility in terms of learning on the adult learner rather than adults being passive learners. Malcolm Knowles (1975) started out with four basic assumptions but later on added two more. The assumptions are:

1. Self-concept: In their quest for learning, people move from

- being a dependent personality towards being more self-directed
2. Experience: In their quest for learning, people bring with themselves a set rich experiences which become a rich resource for learning
 3. Readiness to learn: In their quest for learning, people are more interested in learning subjects that have immediate relevance to their jobs or personal lives
 4. Orientation to learning: In their quest for learning, people find that their time perspective changes from gathering knowledge for future use to immediate application of knowledge. As such, adult learners become more problem-centered rather than subject-centered (Knowles, 1984)
 5. Motivation to learn: In their quest for learning, people are internally motivated and their quest is directed by a desire to achieve, self-esteem.
 6. Relevance: In their quest for learning, people need to know why they need to learn something (Knowles, 1984). They want to know that they are capable of planning their own learning and charting a terrain where they are the drivers.

The assumptions of andragogy fit very well with the concept of adults moving from being dependent to being self-directed and increasingly independent learners (Knowles, 1975) so they need to be taken as learners that are a part of decision making as to what they want from a given educational setting. Self-directed learning has been defined learning in which learners take up proactively the responsibility for designing planning, implementing, weighing and evaluating their own learning experiences (Merriam & Caffarella, 1999). The definition of self-directed learning by Knowles (1975) stresses on the word "process" wherein a learner, "with or without the help of others, in diagnosing their learning needs, formulating learning goals, identifying human and material resources for learning, choosing and implementing appropriate learning strategies, and evaluating learning outcomes" (p.18).

In light of emerging technologies this concept adds to the richness of the learning experience of the teacher which is then passed on to the student. A self-directed teacher would be aware of the need to track the emerging technology so that he/she is in sync with what is relevant and up-coming in the field of technology that will equip him/her with that particular emerging technology and that would consequently enhance their teaching, resulting in fostering the same learning in the students. In this way, the teacher after using a particular tool would be able to evaluate whether that tool adds to the meaningfulness of the content being taught or in what ways to better refine it. So a self-directed teacher would not only depend on relaying the content to the student, but will integrate emerging technology into the lessons optimizing learning in multiple ways. For that the teacher would design a variety of learning activities that would be of an interactive and collaborative type.

The massive uptake of these new emerging technologies, such as mobile technology, cloud computing, Game based learning, MOOCs, open content, learning analytics, virtual remote laboratories, and wearable technology have created an awareness about their existence in the educational firmaments. Emerging technologies have come to stay so it's very important for teachers to also integrate them into teaching, but this decision has to be taken into consideration after reflection as to the when why and in what ways do they add to learning. The adult learners (teachers) are concerned about developing increased competence to achieve their full potential in life as they are motivated towards applying immediate application of knowledge and skills. So in

order to be motivated learners they need to equip themselves with competencies and skills that will keep them updated with whatever the future generations need. In this way, they not only re-define themselves, but also raise the bar high for themselves. Online teachers are to a certain degree aware that being competent in the application of technology especially emerging technologies would enhance their teaching skills. There is a need to design sessions both for pre-service and in-service teachers according to the specific online environment needs of the teachers that teach online following closely the underpinnings of the adult learning systems where in an adult learner is highly motivated and self-directed and one who is cognizant of the educational choices made (Brookfield, 1986).

IV. Emerging Technologies and the Online Teacher

The first challenge specific to online instruction is the need for an online teacher to be proficient in the know-how, and the usage of emerging technologies which has to do with the ever-changing nature of both teaching and virtual environments. Online teachers have considerable concerns when they start teaching online courses especially pertaining to their roles and responsibilities. The challenges they face most are a result of the setting in terms of lack of face-to-face interaction. The fluid nature of learning demands certain teacher competencies and skill sets, some of which are required in face-to-face instruction as well, but which are more pertinent to the nature of online learning.

One of the common problems that mar online interactions is a sense of unreality about the people one interacts with. Having too many Web browsers, dealing with other people they encounter online, especially if they never meet in person, thus being no more than shadowy ghosts, this all could lead to easily forgetting social courtesies. Students may potentially focus on interacting with the instructor alone, ignoring their classmates and preventing the construction of a dynamic virtual classroom, especially if instructors do not set student-to-student interactions as a priority, allowing students to develop a strong sense of one another as real people, rather than virtual people. What is the nature of the questions and assignments posted on discussion boards? Do they generate interaction among students and between students and teachers, thus creating learning communities? Do students find the content engaging?

According to the community of inquiry model, effective learning within a community comprised of students and teachers is an outcome of interactions among three core elements: cognitive presence, social presence, and teacher presence (Garrison, Anderson, & Archer, 2000). The former is defined as the exploration, construction, resolution, and confirmation of understanding through interaction (student-student, student-teacher, and student-content), as well as collaboration and reflection (Garrison, 2007). Garrison and Archer (2000) further elaborate that the "construction of meaning may result from individual critical reflection but ideas are generated and knowledge constructed through the collaborative and confirmatory process of sustained dialogue within a critical community of learners" (p. 91). What is the role of emerging technologies in terms of opening up new windows for interaction, engagement and online collaboration? All these are the very soul of online learning as learning cannot take place in a vacuum.

Emerging technologies can provide multiple ways of interacting, collaborating and learning. As noted by Patrick and Dawley, "Very few teacher programs in the U.S. offer a curriculum for online teaching, leaving districts, states, and virtual schools to

train online teachers. This approach creates inconsistencies in training outcomes across programs” (2009, p.1). Thus teachers are not always prepared to teach online: “Often regular classroom teachers are asked to teach in an online environment with little or no prior experience, and with limited training” (Rice & Dawley, 2007, p. 8). With the lack of prior online teaching experience, lack of engagement in any mentorship programs and membership of professional online learning communities, an online teacher, may be ill equipped to face the challenges of online teaching and learning. Pre-service and in-service training is a need for all teachers, but more so for the teachers that teach online because of the newness of the medium of instruction, the nature of online schooling, and the ever changing technology that has challenged the role of teacher.

The concept of teacher “empowerment” works on the principle of proactively seeking ways to ensure reflective teaching. For example, Erawan (2008) developed a participatory action research project where faculty from a university worked with school teachers to improve the quality of education management through the teachers’ empowerment. The interventions used by Erawan (2008) include workshop training, coaching, learning exchanges, and reflection, amongst other activities. There was a noticeable increment in the quality of teaching and the curriculum in the schools, promoting at the same time educational opportunities for the less advantaged students. Nevertheless, professional development is not some activity wherein a school system pushes you for a certain amount of time (workshops/seminars) to work on some unplanned haphazard sessions, but it is a process of seeking to refine ones teaching/learning skills. One such area where a 21st century teacher needs awareness and empowerment is emerging technologies.

V. Using Podcasts, Vodcasts, and Voicethread

Emerging technologies include a variety of resources such as podcasts, vodcasts and voicethreads. These resources can be of great support for the delivery of the class content while incorporating online resources to enrich a class session. A podcast/ Vodcast is an audio/video file similar to a radio broadcast, which can be downloaded and listened to on a computer, mp3 player, mobile phone. Podcasts are being used by teacher’s at all educational levels and is considered one of the foremost Web 2.0 tools. The teachers can use podcasts for their own preparation both in-service and professional development as there are many casts available freely online. Teachers can also encourage students to create their own podcasts.

Many schools around the world encourage the creation of podcasts by the students themselves especially covering school news, activities and achievements. An example of podcasting in the class is Mr. Coley’s class, where their studies of poetry, the solar system, and the early English settlements in North America become exciting when they’re posted on a class Web site and saved in iTunes as ColeyCasts (Coley, 2015). The fact that their work is posted on the class Website motivates the students to work to the best of their ability. According to Mr. Coley, his Website has been viewed in all fifty states, and eighty-seven foreign countries. Mr. Coley says he makes the children see the recent visitor numbers, and also reinforces that he is not the only person who is going to hear what they’re doing, but people in different parts of the world are going to hear them. In this way they will have a voice that will be heard in the broader national and international community. The students also report what happens in the class every day in

the daily blog. This gives them time to think, and reflect on what they have learned and also a review of the learning interactions in the class. This can also be peer-reviewed and can lead to the development and understanding about multiple-perspectives in a given classroom.

Another tool that helps the teacher in engaging different students and their needs is the Voicethreads. The voice thread is a cloud application, so there is no need to install software for it. The only system requirement is an up-to-date version of Adobe Flash. VoiceThread has the potential to work in any modern web browser with an internet connection. Both the teacher and students can create, upload and share documents, power-point presentations, audio-files and videos on the VoiceThread as it is built with the capacity to host all these. Another advantage of VoiceThread is that it affords class a platform to connect, collaborate and communicate with each other through its commenting feature.

The students and teachers can comment on VoiceThread slides through commenting options such as webcam, text, phone, microphone and audio-file update. All these interactions can be used with the privacy filters that a teacher may use for his/her class. This tool is a very useful web 2.0 tool for teachers as it offers the teacher the flexibility of use both in terms of meeting diverse student needs and also class groupings. For example a teacher could use it different lessons for gifted, at-risk students, students with disabilities. In terms of groupings also teachers could form small groups, the whole class or even independently according to the learning/ lesson plans.

The reason that teachers need to use emerging technology is not as decorative additions to the lesson plans, but how to use those tools and teach students with technology that will have a positive impact on their learning. Emerging technologies can be woven into instruction to make it more interesting, interactive and collaborative for online students. For example, teachers can make use of the lecture-capture tool, such as Tegrity, this tool enables the instructors to record lectures directly from their computer. These recorded lectures can then be uploaded for students to review. Not only does the use of emerging technologies benefit the tech savvy millennial student but are also very useful tools for the student who are not so tech savvy because it opens new windows as Solomon and Schrum (2010) rightly say, “the trend we see coming is the integration of tools for greater transparency and the ease of use...the focus of the students will be on finding, synthesizing and analyzing information, then using it to create knowledge collaboratively and communicate the results—all online, as cloud computing.” (p.14).

VI. Needs of Online Teachers

The best ways to prepare and support online teachers is to equip them with different strategies; especially the ones that encourage student engagement. As an online teacher one can never have too many ideas that can help with engagement. All this is possible if the online teacher gets enough support which could be in the form of well planned and executed teacher preparation both pre-service and in-service. The nature of learning in the online environment has to align with emerging technologies relevant to online teaching at the K-12 level which would need sustenance by well-planned need based teacher preparation for both pre-service and in-service teachers. All this is not possible until the teachers get support and guidance from the institutions they are connected with as aptly addressed by Darling- Hammond (2005) “teachers who understand learning as well as teaching, who can address

students' needs as well as demand of their disciplines and who can create bridges between students' experiences and curriculum goals"(2005, p.5).

VII. Face-to-Face and Blended- Teachers

In the times to come face-to-face education may to a greater extent transition into more blended educational environments. The reason for this fast growing transition is that blended learning combines the best of both the face-to-face formats and online formats. Clark and Mayer (2005) state that "What we have learned from all the media comparison research is that it's not the medium, but rather the instructional methods that cause learning" (p. 21). Although that statement has a solid rationale, face-to-face or blended teachers also need to know or be trained on how to use the technological tools and resources available to include in their classrooms so they can focus on the instructional methods they use that are appropriate for a face-to-face or blended environment.

Furthermore, teachers in face-to-face classes have been progressively increasing their use of internet resources in their classrooms to complement and illustrate class lessons. This shows an "evolution that has often been driven by a small number of tech-savvy teachers and technology coordinators seeking new ways to provide enriching content and to extend learning beyond the walls of the school and the confines of the school day" (Watson, 2008. p.4).

VIII. Conclusions and Discussion

Today's teachers are faced with the inevitable use of technology inside and outside the classroom. The position of the authors is that, considering that not all teachers are technology savvy, there is a need for professional development that focuses on the use of specific technological tools that can improve and facilitate the teaching-learning process. We believe that teachers do not need to know everything about technology, however, it has been demonstrated that when teachers can use technology in an effective way to address the diverse students' needs, they also experience a sense of empowerment that will have a positive effect on the level of engagement in their practice.

Although, and according to Knowles' approach, many teachers can be motivated learners with a high self-concept and regulation; professional development provided to them should include training on the use of emerging technologies that otherwise they would have to learn outside their regular school-related schedules. Professional development sessions addressing the use of technological tools in the classroom and directed to teachers of all levels of expertise should make emphasis on reaching out to pre-service and in-service professionals identified as less knowledgeable about the use of current technological tools.

The use of emerging technologies in diverse educational environments can make a significant difference in the level of engagement of teachers and students in the teaching-learning process. The authors recommend the training of teachers in the use of emerging technologies including resources such as podcasts, vodcasts and voicethreads, which in turn will encourage students to engage in their own learning, facilitate the delivery of the class content and ultimately empower teachers in their professional practice. In alignment with the statement made by Watson (2008), that "evolution" is driven by a few savvies here and now, the position of the authors of this paper is that all teachers should also be trained at a reasonable level through professional development so they too can be ready to guide the new generation of students

that are born in this technological era.

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