Types of Blended Instruction: Different Approaches to Different Mixes

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Abstract

This article addresses how to approach different pedagogies depending on the orientation of blended instruction. Four blended courses with different orientations will be presented in this article. The article will categorize the model of each orientation of blended instruction and different approach to pedagogy and course design.

Introduction

The paper illustrates some major shifts in twenty-first century higher education through the exploration of a blended course which went through a redesigning process to achieve greater success under the umbrella of newly emerging educational milieus, where higher education increasingly offers more flexible, online, blended modes of instruction for time-strained students to be able to have access to learning. Blended learning, one of the most adoptable modes of instruction, helped as well as challenged educators despite its reputation as "the single-greatest unrecognized trend in higher education today," as the president of Pennsylvania State University said (Young, 2002). Ever since the online course management system has been available in the field of education, blended learning has been a naturally developing organism evolving according to educational purposes and contexts. Blended learning has moved arbitrarily between traditional and online instruction which resulted in ambiguity of what, how, and when educators mix different delivery methods of instruction.

Definition of Blended Learning

Blended learning is a formal education program in which a student learns at least in part through online delivery of content and instruction with some element of student control over time, pace, and/or space, and at least in part at a supervised brick-and-mortar location away from home. Additionally, blended learning is called **different** terms such as distributed learning, open and flexible learning, and hybrid learning. The arbitrary nature of blended learning reverberates in the different definitions of the term:

- Combining instructional modalities (or delivery media) (Bersin & Associates, 2003; Orey, 2002a, 2002b; Singh & Reed, 2001; Thomson, 2002)
- Combining instructional methods (Driscoll, 2002; House, 2002; Rosset, 2002)
- Combining online and face-to-face instruction (Reay, 2001; Rooney, 2003; Sands, 2002; Ward & LaBranche, 2003; Young, 2002)

Much interest in blended learning has been exhibited by researchers, but the critical discussion of understanding and the reconceptualization of teaching from the instructor's point of view have been largely absent from the blended learning literature. Most research has been confined to the definition, direction, and the broad goals that educators might espouse as they design blended environments.

The Future of Hybrid Model

The global revolution in information technology, which has transformed the international economy, is also destined to transform American education (Moe, Cuban, & Chubb, 2009). Hybrid schools facilitate the incorporation of a wide selection of educational technological innovations that transform the education process, which is why Moe and Chubb predict that most schools of the future will take a hybrid form (Moe and Chubb, 2009).

Driving the movement toward hybridization is recognition of the considerable benefits that technology offers to the learning process. The promise of technology extends beyond customization of the curriculum and mode of learning. This "force of liberation" (Moe and Chubb, 2009) frees schools from geographic constraints, improves accountability by way of sophisticated data management systems that evaluate progress continuously, and provides significant savings in labor, which can make funds available for use in more effective ways, as the case studies have demonstrated. Furthermore, in the educational sector, computer-based technologies hold the capacity to remediate, accelerate, review, preview, supplement or supplant the existing teaching/learning system. Networking capabilities mean resources can be borrowed from or shared with other educators and students around the country or globe, expanding access to the top-tier teachers and instructional materials (Hassel and Hassel, 2009).

No one best technology exists; instead, the suite of tools evolves daily. As more schools enter the digital terrain, the incentive for technology firms to invest in improvements of their systems and/or content expands. Inevitably, in such a system, quality will rise and prices will fall. Hybridization of traditional pedagogical models presents a unique opportunity for schools to fight low enrollment and boost efficiency. By substituting specialized software for expensive college-trained workers for a portion of the school day, schools can significantly cut costs and reinvest those savings in more productive ways (Jacob, 2011).

A hybrid school model combines both online, computer-based learning with traditional classroom learning. While still attending a "brick-and-mortar" school structure, students in hybrid schools spend all or some of the day taking online classes or utilizing instructional software under the supervision of school staff. The delivery of education is thus a hybrid of the online and traditional models and can be customized to the individual student. Smart assessments allow students to skip content they are familiar with and progress to more challenging levels. Data collection systems provide reports to teachers regarding which lesson plans can be crafted to address areas of high need or interest. The pace of instruction can be modified on an individual basis, and the format for assignments contains a broad scope from crafting traditional essays to creating screen casts, podcasts, or video blogs. The development of hybrid schools should be unsurprising, considering the impact of technological innovation on modern society over the past 40 years (Jacob, 2011).

The Orientation of the Blended Learning

The choices of blended learning entirely change pedagogical approaches to blended instruction and the components of course design. This article addresses how to approach the different pedagogies depending on the orientation of blended instruction. Four different blended courses with different orientations will be discussed. There are three different kinds of blended courses according to the definitions of the University System of Georgia (USG): (1) A partially-at-a-distance course uses technology to deliver more than 50 percent of class sessions, but visits to a classroom are required. If a course is offered through two-way interactive video, then it should be coded partially at a distance because students must meet at a designated location. (2) A hybrid course uses technology to deliver 50 percent or less of class sessions, but at least one class session is replaced by technology. (3) A technology-enhanced class uses technology in delivering instruction to all students in the section, but no class sessions are replaced by technology.

The types of blended learning defined by USG are based on the proportion of use of technology in a class session. Contrary to USG's definitions, this article discusses the different types of blended instruction defined by their orientations other than the proportion of use of online instruction or technology. The orientation of the blended instruction is critical because it decides the entire approach to the instruction in terms of design and pedagogy of instruction.

Four Models of Blended Learning

The following are definitions of the models that are based on the orientation of blended learning as well as the related case studies that differentiate the pedagogical approaches to blended learning.

1. Learning Enhancement Model: Case Study One (Kim, 2013a)

Learning Enhancement Model is a model in which, within a given course or subject, instructors choose to facilitate online learning components to enhance students' learning experiences in the course. The major cause of this model is to compensate for the limitation of face-to-face course components. In the following section, the article illustrates the case study of blended learning based on a learning enhancement model (Kim, 2013a).

a. Start of Blended Learning

Difficulties associated with student teaching relate to time and scheduling constraints, which limit opportunities for student teachers to communicate reactions, reflections, and questions raised after entering into their internship. This has resulted in the lack of opportunity for student teachers to process and make sense of their experiences at field sites by applying and connecting concepts from coursework and by sharing their questions and reflections with peers. The interchange of questions and reflections about learners, pedagogy, and teachers' instructional and classroom management behavior, between and among student teachers, is essential for making sense of the complexity of the social macrocosm of classrooms and schools. Thus, specific ways to foster such interchange among student teachers was explored and described.

b. Pedagogical Structure of a Blended Course

The pedagogy for this specific blended course for future teachers was based on the solid theory and incorporated into the course design, such as problem-solving approach advocated by Bransford and Stein (1993). Gagne (1980) said, "The central point of education is to teach people to think, to use their rational powers, to become better problem solvers." Since learning to teach is far from a simple process, and is predominantly associated with ill-structured problems, teacher educators need to seek a way to help student teachers build the ability to locate, understand, and respond to the dense and multi-faceted problems of the classroom. As an effort to build student teachers' problem-solving and reflection skills, this study facilitated the problem-solving approach, particularly the IDEAL approach, advocated by Bransford and Stein (1993). The IDEAL approach was used to help student teachers frame the way of approaching problems in the classroom. The IDEAL approach consists of the following steps: 1) **I**dentify problems and opportunities; 2) **D**efine goals; 3) **E**xplore possible strategies; 4) **A**nticipate outcomes and act; 5) **L**ook back and learn. The student teachers will locate their problematic cases and look for the strategies consistent with their goals in literature and, if needed, seek professional assistance from professors and cooperating teachers. To extend and build student teachers' problem-solving and reflection skills through socially constructed interaction, student teachers were given access to and invited to participate in Web-based discussion through an online classroom management system called VISTA. The VISTA discussion board was a space for student teachers to share the problems, solutions, and implementations of their practice during internship. The university supervisor posted the weekly discussion topics based on the steps of the IDEAL approach; student teachers were required to comment on peer student teachers' postings and respond to other comments.

c. Improving the Quality of Interaction and Problem-Solving Skills

This study assessed the quality of interaction and of learning experiences of student teachers during computer conferencing while learning problem-solving skills. To examine the quality of interaction, this study examined student teachers' discussion contents by using the Interaction Analysis Model (IAM). The IAM analyzes the online discussion by using five phases: 1) sharing and comparing information; 2) discovery and exploration of dissonance or inconsistency or advanced teaching strategies; 3) negotiation of meaning/co-construction of knowledge; 4) testing and modification of proposed strategies or co-construction; 5) metacognitive statements/applications of newly constructed meaning. This study offers implications on whether use of computer-conferencing in student teaching is effective enough to increase student teachers' problem-solving skills and knowledge construction as well as to prove the fact that computer conferencing is an instrumental medium for quality discussion among student teachers. This case study is the first stage of research that investigates the nature of the dialogic processes generated among student teachers in an online discussion group.

The interview and descriptive survey results showed the positive responses of all student teachers toward use of online forums during student teaching. One of the significant findings was that student teachers appreciated interaction opportunities with peer students. An opportunity to communicate with other student teachers was not in the curriculum of their internship program. In addition, student teachers were often scattered and isolated from peer student teachers even in the same building. As a result, the internship experiences were limited to interaction between the intern and the cooperating teacher in the classroom.

Student teachers valued the interaction with people at the same level as them, non-hierarchical interactions absent in interaction with cooperating teachers or university supervisors. It seemed conversing with other student teachers created a comfort zone where there was no tension, which was inevitably generated by the evaluation authority of the cooperating teacher or university supervisor.

These student teachers enjoyed getting different perspectives on the same issue and seeing how their peers dealt with the same problem. The peers' different perspective gave student teachers a new way of looking at a solution. The collaborative discussion created a new scheme: that peers can be a valuable resource from whom they could learn. This phenomenon was closely related to Vygotsky (1978)'s proposition of social constructivism. The

collaborative discussion in computer-mediated communication (CMC) further created emotional support. Student teachers often felt vulnerable in their new role. Worries over their execution in the classroom generated tension and stress during the internship period. The evolving stress was released to a great extent after they gained knowledge that other interns faced similar issues in their class. It was a pleasant relief for student teachers to discover that others faced either the same or very similar issues.

Another significant advantage to interacting with peers in online forums was that this design of online forum allowed student teachers to step back and reflect on the problem. They then could consider their goal for this issue and broke down the problem-solving approach into steps. One of the most significant findings was the fact that they learned to approach a problem in a more systematic way.

In this study, we showcased examples of interaction analysis for examining social construction of knowledge. This study found higher mental functions of social construction of knowledge appeared throughout the postings in analyzing the progress of the entire discussion transcript. This study showed that the structure of the discussion contributed to higher mental functions in the collaborative discussion. The discussion format of this study guided students to follow the systematic steps to approach the problems: the IDEAL approach. Coincidently, there is an overlap between elements of the IAM model and those of the IDEAL approach.

We believed that the algorithmic, collaborative discussion through CMC helped student teachers equipped with a frame of how to grapple with the problem. Frames impact how we see and make sense of our lives; frames help us to establish boundaries, name problems, form opinions, and uncover solutions (Entman, 1993; Goffman, 1974; Judge, 1992). Schön explains how teachers frame challenging situations that emerge in their practice through "naming the problem, setting boundaries of attention to it, and imposing coherence to provide directions for change" (cited in Achinstein & Barret, 2004; p. 719). Framed within a context of shared knowledge with discussion participants, each student teacher learned from other practitioners to solve problems by experimenting and working toward a viable solution in their classroom. Frames can assist student teachers in assessing their mental archives for similar experiences and can help them adjust their practice accordingly (Schön, 1987).

It is difficult to help individuals learn the ways of thinking and acting required by a profession. Learning to teach for this kind of practice is far from formulaic (Darling-Hammond, 2006; p. 40). It is up to teacher education to provide teachers in training with coursework and experiences to build on, challenge, and move beyond their perspectives and interpretations in order to see teaching with a wider lens (Kennedy, 1999; Wideen, Mayer-Smith, & Moon, 1998). We believed that incorporating CMC in student teaching with theory-grounded structure, such as the IDEAL approach, puts forward the needed training, which allowed student teacher to learn ways of thinking and acting requisite to the teaching profession. Through collaborative discussion practice, student teachers seemed to expand their ability to locate, understand, and respond to the dense and multi-faceted problems of the classroom. Markel (2001) asserted that the advantage of online discussion lies in allowing students time for reflection. Student teachers commented on positive effects of stepping back and breaking down the problems following the steps of the IDEAL approach, a process which was absent in their reflection process in the past experience.

Another key effect of CMC in student teaching was to build a community of learners. A student-to-student communication scheme of online discussions—synchronous or asynchronous—played the major role as a tool to develop a learning community (Choi, 1999; Park & Kim, 2000). Participants of CMC discerned the value of collaborative online forums from which they received pedagogical, managerial, and emotional support. Participants ascertained viable, experimental teaching ideas from other participants and new classroom management approaches. Additionally, they were relieved from the stress encountering a new role in their life by sharing and seeing in practice similar or the identical issues experienced by others. They gained some consolation by seeing that their peers were not always successful.

This study proved that computer conferencing is an instrumental medium for quality discussion among student teachers. Further, it demonstrated criticality of building a systematic design of the online forum in an effort to increase the higher mental function of online communication. In the process of the analysis of transcripts, we learned that there has been an absence of student-student interaction in student teaching, which could develop a different communication environment from interaction with cooperating teachers and university supervisors.

The study of Amdiraal, Lcokhorst, Wubbels, Korthagen and Veen (1998) found that while CMC provided emotional support, it was not as effective for fostering reflection. In contrast, this study found that, a well-structured forum grounded in properly aligned theory could induce quality reflection. The significance of this study is the development of a systematic online forum that builds social construction of knowledge and promotes problem-solving skills for student teachers. The chief advantages of the online problem-solving forum model are:

1. Its appropriateness for using constructivist, collaborative student teaching learning contexts
2. Its focus on research-based problem-solving skills
3. Its integration between the IDEAL approach and IAM to check the quality of online forums

4. Its straightforwardness and simplicity of use
5. Its adaptation of CMC in student teaching

2. Accessibility Model: Case Study 2 (Kim, 2013b)

According to the body of research on the topic of blended learning, there are three major rationales for blended learning: (1) Improved teaching and learning, (2) increased flexibility in and access to learning; and (3) cost effectiveness (Graham, 2006). The second kind of blended course was built based on the institutional needs of increasing the size of enrollment by increasing accessibility of the course. The course that the author had to teach was announced as a hybrid course and the bi-weekly face-to-face times were scheduled in the university course registration Web page. The rationale for using blended learning for this specific course was not a voluntary decision made by the instructor to improve teaching and learning outcomes. Blending the course with face-to-face and online instruction was an involuntary institutional requirement aimed at increasing flexibility in and access to learning. By its very nature, blended learning offers more flexibility to learners by reducing face-to-face time and by adding more online learning components. These features are especially attractive to mature learners who have to balance jobs and family responsibilities with their studying as well students who live at a distance. In the midst of the negative influence of economic turmoil, the institutional decision of increasing flexibility was necessary. Along with other higher education institutions, this medium-size, four-year state university has been challenged by a variety of roadblocks such as escalating costs, decreased funding, increased oversight and regulation, entrenched practices, outdated models, constraining policies, and low graduation and retention rates. In the midst of these chaotic challenges, the major concern of the university leadership has been increasing enrollment and retention.

The face-to-face course the author has taught for many years became a blended-learning course which many researchers posited as "a transformative learning experiences (Garrison & Kanuka, 2004)" for students. The outcomes of this innovative modality of instruction were far from meaningful dialogue with peers, thoughtful reflection online, and increased student engagement (Ziegler, Paulus, & Woodside, 2006). By contrast, my blended course did not achieve the positive results of blended learning. Both parties, instructor and students, finished the semester with frustration and resentful feelings about the format of the course. The questions are raised: What have I done? What went wrong with the course? The author had to analyze the factors of unsatisfactory results in the process in implementing the blended course.

a. Traditional Attitude: Lecture Obsession

The lack of familiarity with technology tools in computer-mediated systems (CMS), which appeared to be one of the major reasons in the failed integration of two modalities of teaching, was not applied to the author's case since she had majored in instructional technology for her doctorate. The author held enough technology skills to hold technology workshops for faculty members in her department. The major cause of the failed course was to manage class time throughout the semester. A blended approach permitted the instructor to change the way she uses the class time. The major concern came from lack of face-to-face time to deliver the course content in a given time. Sixteen weeks to deliver the course content was shrunk to eight weeks. All content seemed too important to eliminate any of the content. She has taught the same course successfully with high ratings of instruction effectiveness in her teaching evaluations. The component of her face-to-face course consisted of mainly lectures and class discussion along with students' assignments. Because her presentation skills were highly favored by students (documented by her teaching evaluations), she was resistant to change the way that the course was taught. Because of the large volume of the content the author perceived as too important to eliminate, the instructor rushed to deliver the content in the reduced class time. Rushed face-to-face instruction led to students' misunderstanding of the content and confusion at the end of classroom session. Because of the time constraint, no classroom discussions were held during the semester. Students' feedback notes showed that lectures did not result in successful learning outcomes. Feedback she received from students also clearly indicated that too much information was presented during the face-to-face periods.

The author had successful experiences in facilitating online components in her practice in the past. She used a discussion board as a space for student teachers to share the problems, solutions, and implementations of their practice during internship. As a university supervisor, she posted the weekly discussion topics based on the steps of the IDEAL approach advocated by Bransford and Stein (1993). Each week, student teachers were required to comment on peer student teachers' postings and respond to other comments. This study proved that computer-conferencing was a beneficial instrumental medium for quality discussion among student teachers. This study also suggested that teacher educators should consider using online forums as training to help student teachers build on, challenge, and expand their perspectives and interpretations in order to improve problem-solving skills. Further, it demonstrated the criticality of building a systematic design of the online forum in an effort to increase the higher

mental functions of online communication. She also used online components of a discussion board to improve student learning. The online discussion board played a role as a checker to ascertain if students completed the reading assignments according to instruction given in the face-to-face class. The facilitation of blended learning seemed to open profitable educational opportunities in the previous blended-learning experiences. In contrast, this particular course seemed not to match the previous positive experiences. This course denied the effectiveness of the blended-learning course. After a long reflective process, the author came to the conclusion that there was only one factor that was not present in the previous blended courses: the reduction of the major component of the course, lecture. All other blended courses incorporated the online components of the course as a supplemental component to the original course curriculum.

What was failing this particular blended course was the failure to transfer the lecture to comparable online components and to understand the strengths of both modalities of instruction. The next question will be how to approach this issue. Here are the pedagogical tasks to analyze the research and trials and errors of the future practice:

1. Analyze the components of the course.
2. Find the strengths of face-to-face instruction and online learning.
3. Find the weaknesses of face-to-face instruction and online learning.
4. Find the comparable component for the lecture. (screencaptured lectures and Voice-over PowerPoint slides)
5. Find the weaknesses of comparable components and supplement additional components for the weaknesses.
6. Extract the essence of the course content to reduce the volume of the lecture.

b. Failure to Locate Compatible Online Components

The lecture component of the class needed to find different modality to supplement the loss of the content of the lecture. Two major components were readily available as online components for blended learning: discussion board and quizzes. The quiz was facilitated as a tool to check students' completion of required readings. These quizzes will ensure students' completion of reviewing the screen-captured online lectures. Online discussion board was used to check the reading assignment, to encourage students' reflection on learning, and to replace group collaboration. The author learned that online discussion is the tool to change the overall quality of the courses. Ways to facilitate the online discussion board are unlimited: from the plain talk of the topic to group discussion to sharing the technology-infused project. It is critical to know the possibilities to convert the discussion board space for the simple monologue-type discussion to a space for multiple educational activities which will enhance the collaboration and interactivity of the course.

The online discussion board needs to be designed as a space where student knowledge is individually constructed and socially co-constructed by learners. This approach is in accordance with the constructivist view of learning, which advocates student learning occurs in the milieu of their interpretations of experiences in constructivist learning environments (CLEs), rather than merely being transferred from the instructor (objectivist learning). The fundamental difference between CLEs and objectivist instruction is that students learn domain content in order to solve the problem, rather than solving the problem as an application of learning (Jonassen, 1998). The problem-solving skill, self-direction for learning, and collaboration are three major areas in 21st century skills (The Partnership for 21st Century Skills, 2013) to be a globally competitive future worker. However, there are few course design models that address this significant issue. To address how to design a learning environment that produces the knowledge generator, rather than the knowledge consumer, this study experimented with **a pedagogical model** of constructivist learning environments (CLEs) that engage learners in meaning making (knowledge construction) (Jonassen, 1998).

- Provide students with the authentic context of the learning task with the knowledge construction process (e.g., development of scenarios that help pre-service teachers to write lesson plans grounded in Piaget's constructivist theory).
- Have students use multiple modes of representation (e.g., creation of video clips to present Erikson's psychosocial development).
- Provide collaborative learning environments (e.g., facilitate online publishing websites (Wiki, Twitter, blogs, Ning and the like) to accumulate their collaborative learning in Brenfenbrenner's bioecological model).

c. Strengths and Weaknesses in Face-to-Face and Online Instruction

For the best allocation of the particular components of face-to-face and online modalities, it is key to understand the strengths and weaknesses of both modalities. Strengths of both modalities need to be capitalized on

while the weaknesses of both modalities needs to be eschewed. Oftentimes, the strengths of online learning seem to be the weaknesses of its face-to-face counterpart.

3. Instructor Discretion Model: Case Study 3

The third orientation blended course was to increase the effectiveness of instruction where a math class was designed to increase the passing rate of a math class by incorporating the cutting edge technology—such as Camstudio and LivePen—which was intended to demonstrate the step-by-step process of math problem. There are two primary components of instruction. The first is traditional instruction, which delivers instruction to students on a face-to-face basis. The second is multimedia presentations, which incorporate audio, video, and interactivity using on-screen quizzes, cursor-manipulated tools, and navigation. Students will work at their own pace through a lesson strand correlated to the course objective.

In a general sense, a math class is perceived as a difficult subject for an online course. Low math scores of students have been a major concern because of low student retention and graduation rates at many universities. Despite the general preconception of math as a difficult subject to convert to an online instruction mode, the instructor of a math course found the online component of the class to be useful for review for the difficult math process to follow. An online course's accessibility (anywhere/anytime) allows students to view the recorded lectures repeatedly. Especially, thanks to the capacity of online instruction to allow students to adjust pace and time, the instructor found the online component beneficial for pre-review and review of complex math problems that students had struggled to solve. As a result, the blended mode of instruction improved teaching effectiveness and decreased the student failure rate.

Recognizing the positive effects of computer-aided instruction, which has been scientifically proven to close achievement gaps for at-risk students (Barrow, Markman & Rouse, 2009), this study discusses an innovative way of teaching mathematics through integrating instructional computer tools into the traditional instruction by using such tools as WebAssign (an online instructional tool) and Bamboo (a graphics tablet). The Bamboo tablet is a computer-input device that enables a user to hand-write, similar to the way a teacher writes with a chalk on the blackboard. This is one way of showing how these technology tools can perform the Vygotsky constructs of scaffolding by analyzing the relative effectiveness of different hinting styles (scaffolding), learning styles, and cognitive development levels.

The study found that how students with different learning styles benefit from distinct hinting formats from different modalities of instruction (such as only texts, audio instruction, and video instruction with math experts). Vygotsky(1978)'s term "scaffolding" is used to describe tutorial interventions or decisions serving this research project. "Hints" are problem-solving assistance that gives additional support in ways that improve the chances that the learner will be able to solve a problem. Another form of help is "problem-decomposition scaffolding." In this method of problem decomposition, the math problem is broken into components, which allows individuals to solve a problem more easily. The hinting session, one of the components of instruction, will offer clarity that would not be possible without the use of technology by providing multimodal, interactive, gradual presentations that convey the concept effectively. Pedagogically enhanced math instruction empowered by multimedia capabilities enriches the lesson presentations, self-pacing learning, and instantaneous feedback.

4. Cost-effective Model: Case Study (Kim, 2010)

The fourth kind of blended course was developed due to the strain on financial resources of a professional development initiative for in-service teachers. The reduction of cost was the major concern in the course development of this kind of instruction because either the training organization or trainees could not afford time and money to attend educational sessions.

The technology grant project was launched to help a county offset reduced state funding of technology training and close the achievement gap between economically disadvantaged students and non-economically disadvantaged students by providing technology resources to all schools. The staff development plan was designed as part of a grant project to improve teachers' instruction through the implementation of technology and research-based instructional practices as well as to develop departmental curriculum and design program evaluations.

Economic turmoil led the grant project team to consider innovative ideas to overcome the budgetary limitations through implementation of the grant. A limited time frame and funding were major considerations when the training team developed the "Professional Learning Sequence." Three assumptions were made: 1) All training does not have to be face-to-face training. 2) Teachers will need additional onsite support after training. 3) Grant schools should agree to the new paradigm of training. According to the new training plan, 50 hours of professional learning is placed in three different formats: 1) face-to-face; 2) collaborative team session; 3) digital online instruction. As follow-up to the training, supplemental onsite support was provided. The face-to-face training

focuses were: 1) direct instruction, which includes lectures, demonstrations, and hand-on activities; 2) collaborative sharing and redelivery, which encourages learning as a community; 3) lesson planning, which involves the construction of instructional activities using technology resources. Two hours of collaborative team sessions were conducted during the planning period and at the end of training sessions. Two teachers per team shared the group ideas. Digital online instruction sessions were conducted for 20 hours. Course content sites were created. These included educational technology reading assignments, reflection assignments using blogs and wikis along with a list of sites and articles, online projects, and lesson preparation and planning assignments.

This study investigated the extent of the perceptions of teachers on the effectiveness of the constructed hybrid technology training sessions to effectively meet their needs. If technology is to be used by students and their learning outcomes, well-structured technology training is mandatory. Since budgetary constraints limit providing on-site training, the traditional method of offering professional development, a critical need exists for exploring the effectiveness of fully online or hybrid training with online alternatives that will lead teachers to possess the confidence, understanding, and skills to effectively incorporate technology into their teaching practices.

Pedagogical Approaches to Professional Development

Increased access to information through new technologies, along with the need to prepare children to compete in an emerging information-based global economy, promises to fundamentally reshape school practice as we move into the next century (Harvey & Purnell, 1995; Jonasson, 1993). Despite increased access to computers and related technology for students and teachers, schools are experiencing difficulty in effectively integrating these technologies into existing curricula.

According to the U.S. Congress, Office of Technology Assessment (1995), the lack of teacher training is one of the greatest roadblocks to integrating technology into a school's curriculum. That same report revealed that most school districts spend less than 15 percent of their technology budgets on teacher training and development.

Thus, Moursund's (1992) contention that school systems have not taken into account the training and support teachers needed to appropriately and effectively use computer-related technology in the classroom remains relevant. The following elements are the pedagogical considerations that the professional developers and school administrators should take into account in planning professional development initiatives.

Time: Teachers must have substantial time if they are going to acquire and, in turn, transfer to the classroom the knowledge and skills necessary to effectively and completely infuse technology into their curricular areas (Hawkins & MacMillan, 1993). However, Harvey and Purnell (1995) suggest there is an overwhelming sentiment that schools have yet to create the kind of training and practice time teachers need in order to learn how to effectively integrate technology into the curriculum.

Taking into account varying needs: When designing staff development sessions on technology, individual differences must be addressed and individual strengths supplemented (Shelton & Jones, 1996).

Sustained staff development. To help teachers properly complete the "learning cycle" of computer-related professional development, training must be ongoing and systematic (Kinnaman, 1990).

Flexibility of professional development opportunities: Staff training programs designed for the technological development of teachers are effective when programming offers flexibility and is not based on a "one size fits all" philosophy. Teacher training programs must not expect that all participants will leave with the knowledge and skills to facilitate the transfer of learning to their individual classrooms. Instead, Browne and Ritchie (1991), Harvey and Purnell (1995), and Stager (1995) state that effective staff development for technology requires flexible content and opportunities.

Provisional support: One of the most effective ways to align staff development with district/school goals is to invest in someone with experience in both technology and curriculum (Kinnaman, 1990).

Collaborative development: The environment in which the effective technological development of teachers occurs is built around collaborative learning. Because teachers vary in their level of expertise at the time of their training, the context which surrounds their technological professional development must provide a non-threatening environment that is sensitive to the individual teacher's level of expertise and experience (Browne & Ritchie, 1991; Shelton & Jones, 1996). As a result, Stager (1995), Browne and Ritchie (1991) suggests that collaborative problem solving and cooperative learning must undergird the approach to technology learning for teachers.

Linking technology and educational objectives: The technological training must have an instructional focus that guides teachers to think first about their curriculum which, in turn, helps them address how to integrate technology into the curriculum (Guhlin, 1996; Persky, 1990).

Intellectual and professional stimulation: The model of staff development for technology must put the teacher/learner at the center of the learning experience and provide a meaningful context for learning (Stager, 1995).

Teachers need instruction that engages them and forces them to reflect on the benefits and limitations of teaching with technology (Persky, 1990; Shelton & Jones, 1996). When teachers engage with others in ongoing reflection about what they have learned about the instructional use of technology, they are more likely to critically evaluate their own pedagogical practice and redesign their instruction.

Conclusion

Despite its high demand and the rapid adoption of the blended mode of instruction in higher education, the knowledge base of blended instruction is still in its infancy stage. There are myriad areas that call for better understanding before settling upon the definitive mix of the Web-based instruction and its face-to-face counterpart. An instructor of hybrid courses needs to have a deep understanding of how people learn, what students' learning styles are, and what technology can provide for the successful design of technology-integrated learning environments (Bransford, Brown, & Cocking, 2002).

It is important to note that many school operators have implemented more than one blended-learning model for their students. The types of blended learning have been typically defined on the basis of the proportion of use of technology in a class session. Contrary to the traditional method of categorizing the kinds of blended instruction, this article discusses the different types of blended instruction defined by their orientations other than the proportion of use of online instruction or technology. The author found that the orientation of blended instruction is critical because it decides the entire approach to the instruction in terms of design and pedagogy of instruction.

This article discusses how the same instructor found opportunities as well as challenges at the same time in implementing blended instruction depending on the orientation of the blended learning. That means not all blended instruction is effective for all learning environments. According to the case studies presented in this article, the success of blended learning is dependent upon understanding the nature of the instruction, algorithmic preparation of instruction based on the analysis of the course, locating comparable online (technology) components to traditional counterparts of instruction, understanding strengths and weaknesses of different learning modalities, and incorporating pedagogically effective educational theories into the course design. This article highlights empirical insights for pedagogical approaches to different mixes of blended learning and practical strategies grounded in the practice of university faculty members. Ideally, this will lead to readers reflecting on their own instruction and considering ways to develop a successful blended course.

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