

Blended Learning in Schools and Training: a Review of Educational Practice

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Abstract - Blended learning has become an increasingly popular method for delivering online instruction. In blended learning, a mixture of face-to-face and web-based strategies is used to take advantage of the strengths of both and minimize their weaknesses. In this article, a brief overview of blended learning is presented. The current use of blended learning in primary/secondary education, higher education, and training settings are then discussed. In each of these settings, a different approach to blended learning is evolving due to the specific needs of the learners. The article concludes with speculation on the future on blended learning.

Keywords - Blended Learning, Web-Based Training, Face-to-Face Instruction, Education, Organizational Development

I. INTRODUCTION

Online learning has evolved over the past thirty years. In the early 1990s, online learning largely meant traditional classes that would access the Internet for additional information or resources provided on a personal website. The next decade saw the rise of the learning management system (LMS). This shifted the focus to classes that were entirely online and

little to no face-to-face (F2F) contact. In the early 2000s, a greater emphasis was placed on the social network. With an LMS there is limited contact outside the virtual classroom and the distinction between instructor and student is emphasized. Social networking in education better connects students with each other and gives them more responsibilities as active learners. In the past few years, this increasing emphasis on social contact has also renewed interest in the value of F2F educational experiences.

More recently, blended learning has become increasingly popular. A simple definition is that blended learning is any educational experience that provides a mix of online and face-to-face learning environments. Blended learning is not new; the earliest online learning experiences were usually a supplement to existing face-to-face classes. However, the quality and variety of online experiences have changed greatly in the past decades. Also, creating a positive blended learning experience is more challenging than simply combining the best elements of online environments and those of face-to-face environments.

This article provides a brief overview of blended learning. It also describes how

blended learning can be used effectively in a number of different settings.

II. DEFINING BLENDED LEARNING

Although “blended learning” has become a common term in education, there are many ways it can be defined. According to Powell et al. [1], it is a combination of traditional face-to-face schooling and online instruction, but the online component must deliver personalized, differentiated instruction for a group of learners. The Online Learning Consortium, a large research organization in the United States, defines blended learning as an educational course that contains 30-79% of its content delivered online [2]. A course with 1-29% online content is termed web-facilitated. A course with no online content is called traditional, and one with 80% or more is considered an online course. One U.S. Department of Education report defined blended learning as face-to-face instruction that uses online learning components as an enhancement to learning [3]. In that report, the value of online learning was particularly noted for extended the effective learning time for students.

Regardless of the specific definition used, there is agreement that when used properly a blended approach can take advantages of the strengths of both face-to-face and online methods and minimize their weaknesses.

One of the main advantages of online learning environments is that they are available on-demand and are accessible from any Internet-connected location. As noted previously, this has the ability to extend the learning time for students outside of the classroom. If the online materials include individualized instruction, learners can proceed through them at their own pace. Slower students can take more time; faster students can finish quickly and move on to new material. Online activities can involve synchronous and asynchronous activities. In synchronous activities, all participants must be online together, with the same time constraints as a F2F experience. However, asynchronous

activities allow interactions between learners and the instructor that take place at different times.

A weakness of online learning is that it can be expensive in terms of time and labor to create, particularly for individualized instruction. This is minimized when the instruction is provided to larger numbers of students. Another weakness is high attrition rates. The flexible nature of online learning environments requires that students be able to manage their own learning and take responsibility for communicating effectively and completing assignments. Students often drop out of online environments for this and other reasons. Group projects and asynchronous activities can be also highly disrupted when one or more students are not active participants.

Face-to-face learning environments have their greatest strength in an experienced instructor. In a group environment, an instructor still provides an effective and efficient resource for many learning activities. Instructors are more flexible than mediated content and can respond to a wide range of questions and situations. Classroom environments also allow social interaction with peers and group activities in a non-mediated setting. In many educational and training situations, the classroom may involve specialized labs and equipment and authentic settings not available to someone studying at home.

One of the weaknesses of face-to-face learning is that it occurs mostly in group settings. Opportunities for individualized instruction are more limited. Although this is usually described as affecting learners who need to move slower or those that want to move faster, it actually applies to every student. Each learner has a unique background, previous knowledge and experience, and many other factors that could affect the ability to perform effectively in a large group environment. Face-to-face learning also has physical limits to participation including: class size, instructor availability, and class

scheduling. Although these also occur with online classes, they aren't as dramatic as requiring a group of individuals to meet at a physical location on a regular basis. Smaller group sizes tend to increase the quality of the interaction and instruction, but also limit participation by greater numbers of students.

Simply combining online and face-to-face learning to create a blended learning environment will not necessarily provide the advantages of both methods and minimize the worst. An instructor or designer must make good choices in determining what online components are needed, what face-to-face components are needed, and how they will work together. However, effective blended learning environments have been reported to increase interaction between instructors and students, improve student engagement and satisfaction, and lower student withdrawal rates [4].

III. IN PRIMARY / SECONDARY SCHOOLS

In the United States, blended learning in primary and secondary schools has taken on many forms. Some have used the term hybrid learning to mean the same thing as blended learning. Researchers at the Clay Christensen Institute make a distinction between hybrid learning, which is seen as a mix of online and F2F learning that is closer to tradition education, and blended learning, which is seen as a more innovative form of instruction [5]. They provide four examples of hybrid learning and three examples of blended learning most commonly used in American schools.

Hybrid learning integrates online learning most closely with a traditional F2F classroom. Examples include: the Station Rotation Model, the Lab Rotation Model, the Flipped Classroom Model, and the Individual Rotation Model. In the Station Rotation Model, Internet-ready computers are available in a traditional classroom and the teacher has some students working on independent web-based activities while others work with the teacher in a F2F mode. The students rotate between the

two. In the Lab Rotation Model, a computer classroom is used by the entire class for online activities when they are not in their normal classroom for F2F work. In the Flipped Classroom Model, the school is used for F2F activities with the teacher. Online activities are completed at home or another off-site location, such as a library. The Individual Rotation Model is one in which each student has a unique set of F2F or online activities to complete based on a personalized learning plan. Which of these models a school uses can depend on the technology and resources that are available both to the school and to the students at home.

Blended learning can be used in more innovative ways. Examples include: the Flex Model, the A La Carte Model, and the Enriched Virtual Model. In the Flex Model, students get their instruction mostly from online instruction. At a F2F location, there is a teacher who is responsible for their learning. The students will use this location for some instruction and when help is needed. In the A La Carte Model, students have a normal F2F educational experience. However, they may choose to take entire classes in an online format. These online classes may be completed on computer resources at the school or at home. In the Enriched Virtual Model, an entire course is divided into online components done off-site (usually at the student's home) and F2F components at the school. In each of these blended learning examples, there are significant changes to how resources are used, the expectations of students, and the expectations of teachers. As such, they can be innovative, but there can be very real concerns about how to ensure quality, accountability, etc. However, these models do have the potential to make primary and secondary schools more flexible to future learning demands.

IV. IN HIGHER EDUCATION

In higher education, blended learning has been the result of evolving practices more than the distinct push for innovation. In many ways, what has become known as online learning

began as efforts to reach off-campus student populations [6]. Once online learning systems became available, on-campus instructors and students also began using them. Online learning allowed greater flexibility in teaching methods and could be used to reduce the amount of time spent in the classroom. This led to a key distinction in higher education. When online activities are used to replace face-to-face activities (resulting in less actual classroom time), the term blended learning is used. When online activities are used without a reduction in classroom time, it is called enhanced learning.

There are two major reasons for pursuing blended learning in higher education. The first is economical. Reducing the amount of time of time students spend in physical classrooms can have immediate financial benefits. Classroom space on a campus is an expensive resource that is both limiting and requires much planning and scheduling to use efficiently. The number of available classrooms at an institution limits the number of classes offered and the number of students that may be enrolled in specific classes. When technology is added to classrooms (such as projectors, student workstations, etc.), costs increase and the demand for those classrooms are often higher. By allowing on-campus students to complete coursework outside of a classroom, blended learning decreases demand on classroom space. Students may work from their rooms, campus computer labs, or workstations in the library, freeing classroom space. Secondary benefits can be seen in a decreased demand for parking, transportation of students to campus buildings, etc. It would be wrong to think that cost savings could be a sole driver of blended learning. However, it is important to see that when it is adopted in higher education it doesn't just change the classroom, it causes changes throughout the campus environment.

The second major reason given for pursuing blended learning in higher education is related to effective learning. Blended learning is not simply taking aspects of the F2F classroom and putting them online. Rather the goal is to

keep the best aspects of the classroom experience and combine it with things that can be done well in an online format. This usually involves a focus on student-centered instruction. Also, there is an interest in increasing the level of interaction for the student. In an online environment, this includes: student-instructor interaction, student-student interaction, student-content interaction, and interaction between the student and outside resources. When done well, these interactions will engage the student more deeply in the content and improve motivation. In a classroom environment, the instructor works from notes, content knowledge, classroom experience, and can improvise as needed. Online environments are more structured and usually instructors have less online expertise. Institutional support for faculty members in the use of technology, the development of blended courses, and continuing support are critical for increasing interest and participation in blended learning [7].

V. FOR TRAINING

Online learning has become an attractive option for training in business and other organizational settings [8]. As in other environments, accessibility to educational materials at any time from any Internet-enabled location is an attractive option. Unlike most schools, many businesses are likely to have geographically dispersed personnel. This is very beneficial for regional, national, and global organizations. For many organizations, the availability of online training greatly reduces travel and other costs associated with centralized training. However, creating effective online learning still involves costs associated with its design and development. These costs won't be justified if the training is not effective. A recurring criticism of online training is that there is often a lack of engagement with the learners, resulting in poor participation and failure to complete training courses. Blended learning, often called blended training, can be applied in business and other organizational settings to address some of the weaknesses of an online-only approach [9].

For example, businesses can use F2F orientation sessions to introduce online learning to employees and make them more comfortable with the training. In a business setting, the F2F component may be a traditional training classroom, but it may also take the form of a training supervisor or mentor who meets periodically with the learner in the workplace, checking on status, training goals, and expectation.

In general, employees seek training that they perceive has a direct impact on their jobs and their value within an organization. However, there are often other motivations. One study of online and F2F training at a large European bank indicated that employees were also largely motivated by affective and social factors regarding their employer [10]. They saw participation in training as a way to connect with the company, interact with colleagues, etc. Often, online training focuses on improving knowledge and skills and unintentionally removes these other benefits. The addition of F2F components through blended learning provides learners more opportunities to make connections with others and provides this social connection. This can add to the motivation and engagement of the learner. It also helps to develop a network of expertise and support within an organization after the training is over.

VI. CONCLUSIONS

When online learning first became available, some naively saw it as a replacement for face-to-face learning. Others tried to simply deliver content from books and lectures in the new medium. The best uses of online learning took time to develop and eventually provided a more unique experience.

In part, the current interest in blended learning is an acknowledgement that online learning by itself cannot address every learner issue and that face-to-face interactions are important to the learning process. In reviewing how blended learning is being used in primary/secondary schools, higher education, and training, it is also clear that blended

learning is a broad term that covers many different types of learning environments. There is no single blended learning solution that can be prescribed to a particular educational problem. Rather, blended learning treats various online and F2F methods as resources that may be used in various ways to meet learners' needs. As blended learning approaches evolve, the most useful provide excellent models to follow.

At the same time, the very concept of what constitutes online resources in blended learning is being changed by the widespread use of smartphones, digital tablets, and other Internet-enabled devices. Ubiquitous computing means an even more extensive network and more interactivity with a variety of devices [11]. Many of these devices bring the network closer to authentic experiences and allow data collection, formal and informal, to inform the network. Some educators are using the term mobile learning (or m-learning) to describe how to integrate the use of these devices into classroom and training activities. As this becomes more widespread, it will impact blended learning dramatically.

If we do reach a point of truly ubiquitous computing, there may no longer be a need for the term blended learning. Computing will have fully integrated with our face-to-face world, and we will never be offline.

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(Arranged in the order of citation in the same fashion as the case of Footnotes.)

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