

Handbook of Research on Social Interaction Technologies and Collaboration Software: Concepts and Trends

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Chapter 20

The Hybrid Course

Facilitating Learning through Social Interaction Technologies

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ABSTRACT

This chapter surveys the benefits and challenges of hybrid courses, which blend face-to-face instruction with online learning, and opportunities provided by the introduction of Web-based social interaction technologies. It discusses the pedagogical implications of various Web 2.0 tools: that is, asynchronous discussion boards, blogs, wikis, podcasts, RSS, e-portfolios, folksonomies, educational gaming, data mashups, and simulations. The authors argue that as hybrid courses continue to evolve to meet the needs of students, instructors, and institutions of higher learning, the integration of Web 2.0 applications in a hybrid model requires thoughtful course design, clear educational objectives, and carefully planned activities.

INTRODUCTION

The traditional face-to-face classroom, in which an instructor lectures, demonstrates, and leads discussion, has been the primary method for acquiring an education in colleges and universities. However, advances in social interaction technologies have resulted in greater variation in educational experiences for online learning. A study by the National Center for Education Statistics surveying over 4,000 two and four year degree granting institutions found

that 88% plan to increase or start offering courses using asynchronous computer based instruction as the primary mode of delivery (National Center for Education Statistics, 2003). Asynchronous instruction means that students and faculty are not required to be present at the same time (either electronically or in person) to participate in the class. Technology is clearly transforming the educational landscape.

On the continuum from fully face-to-face to fully online courses, *hybrid* or *blended* courses are centered somewhere in the middle merging the most desirable aspects of both approaches (So & Brush, 2008). In a hybrid course, students spend more

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time learning online through planned activities, tutorials, assignments, and discussion. To make time for online activities, the face-to-face class meeting time is reduced significantly. Unlike the traditional lecture-based classroom (also known as face-to-face teaching), students have more flexibility regarding the time and place where learning occurs (Aycock, Garnham, & Kaleta, 2002). Some contend that this promotes students' active engagement in their learning, typically called *student-centered* or *constructivist learning*. Bransford, Brown, and Cocking (1999) argue that active, as opposed to passive, learners are better able to understand complex information, are more likely to transfer concepts learned in one setting to another, and are more likely to retain information.

BACKGROUND

As recently as the mid 1990's, most students did not own a personal computer, used single function technologies (e.g., phone, camera, video player), and had irregular access to the Internet. Today's students typically own computers, have multi-function mobile technologies, and use the Internet on a daily basis (McGee & Diaz, 2007).

The technological environment continues to change for faculty as well. During the 1990's the "technology" in the classroom originally consisted of chalkboards, overhead transparency projectors and VCRs. Classroom Internet access was not common. Additionally, faculty may or may not have had access to email from home, and if they did, dial-up service made home use of the Internet slow and sometimes unreliable. Today, more classrooms are equipped with various types of technology including Internet access, integrated projectors for computers and DVDs, audio and video devices for distance learning, and document cameras, to name a few. Typically, faculty members have home access to campus computing resources using improved broadband connections.

Learning management systems, sometimes called *course management systems*, are becoming more commonplace and are enabling communications, learning materials, assignments, and grading to occur online.

Although face-to-face lecturing is still a mainstay of many professors' teaching repertoire, emerging technology is shifting the methods used by faculty (Maloney, 2007). Educators are no longer solely lecturers, but are increasingly becoming designers and facilitators of learning environments. Along with changes in technology, advancements in learning theory also play a role in this paradigm shift. Educators are now advised to incorporate more constructivist pedagogy in which active learning is accomplished (Rovai, 2007). Instead of focusing exclusively on the transfer of knowledge from teacher to student, educators are encouraged to find ways to motivate and involve students in the discovery and even the creation of knowledge. The expected outcomes of effective teaching are also changing. As educators move from a teaching-centered to a learning-centered model, student recall of information is not necessarily the preferred outcome. Student understanding, integration, and application become salient desirable outcomes. Indeed, changes in technology and learning theory are having an impact on how contemporary educators approach instruction. Many educators are beginning to teach in ways that differ from how they were taught when they were students (Hartman, Dziuban, & Brophy-Ellison, 2007).

According to Burbules (2007), education needs to be understood in the current context of technological ubiquity. Although definitions of Web 2.0 vary, the term acknowledges development of web applications beyond read-only websites that now allow Internet users to increasingly become content providers as well as receivers. The earlier developments on the World Wide Web served to disperse information in a top-down manner. Today, the web has evolved to be more participatory with collective users building information from the bot-

tom up or interacting with each other in real time or asynchronously. The web is also increasingly accessible and user-friendly. Web feeds or web syndications update relevant information automatically, harnessing the combined intelligence of users. Social networking and resource sharing sites have emerged rapidly and “students have turned these sites into the nexus of their social and even academic universe” (Hartman, Dziuban, & Brophy-Ellison, 2007, p. 66). The current uses of technology are blurring traditional spheres previously viewed as separate. Work and play, learning and entertainment, accessing and creating, and public and private areas are no longer demarcated with clear distinction (Burbules, 2007).

This chapter reviews newer and emerging applications of technology, many of which are being used in education, particularly in hybrid courses blending traditional face-to-face teaching with enhanced technology. Learning management systems, user-created content, social networking, collaborative learning, podcasting, virtual worlds, and educational gaming are beginning to broadly affect higher education, and will continue to do so in the near future. The benefits and challenges of these emerging applications for hybrid learning are discussed.

HYBRID COURSES AND SOCIAL SOFTWARE

Courses taught in hybrid mode do not simply “add technology” to the existing curriculum, but should involve thoughtful course redesign in order to apply principles of good pedagogy fully augmented with outside-of-class activities enabled with technology. Bloom’s taxonomy describes several categories of learning. In the cognitive learning domain, instructional activities range from lower levels to higher levels of learning. For example, as one moves up the hierarchy (knowledge, comprehension, application, analysis, synthesis, and evaluation) the development of intellectual

attitudes and skills become increasingly sophisticated (Bloom, 1956). Higher thinking rests on a foundation of lower order thinking. For most courses, hybrid mode is best implemented by having the students do preparatory work outside of class so the in-class activities can provide an opportunity for learning at higher levels of Bloom’s taxonomy with very little traditional lecturing occurring.

A Learning Management System (LMS) is an important component of most hybrid courses. It is a software application or web-based instructional technology used to develop, implement, and evaluate student-learning activities. Examples of learning management systems include Blackboard®, Webboard®, or WebCT®. Some faculty members create their own websites providing resources analogous to an LMS. An instructor may use the LMS to provide learning materials (e.g., readings, assignments, brief video, links to external websites, etc.) and social software applications (e.g., interactive chat, blogs, etc.).

A typical tool embedded in an LMS is an *asynchronous discussion board*. According to Martyn (2003), the asynchronous discussion board lets the students post technical and content-oriented questions, clarify assignments, post and answer each other’s questions under the supervision of the faculty member, and build community. Gannon (2004) explains how she incorporated active learning into her course by giving students weekly online assignments, which included using the discussion board. Students were informed that their postings would be graded for quality and quantity, and Gannon observed that most students were motivated to participate and successfully completed the work. Likewise, a sample of 413 students in a hybrid setting reportedly found the discussion board tool more useful than in-class discussions because: (a) they could take their time to compose a response, (b) they were required to participate online as opposed to face-to-face where participation was not required, and (c) students who normally do not participate in class

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were less reluctant to participate online (Amrein-Beardsley, Foulger, & Toth, 2007). There is also evidence that participation in online discussion can enhance engagement during face-to-face in-class discussions (Vess, 2005).

Rovai (2007) provides a thoughtful synthesis of current techniques for facilitating online discussion effectively. Among his recommendations, instructors should provide forums for socio-emotional discussions as well as content and task oriented discussions. This serves to build a sense of community within the course. Similarly, instructors should balance developing a social presence in the virtual environment while avoiding monopolizing discussions. Additionally, instructors need to attend to social equity issues, and have an awareness of the communication patterns of culturally diverse students.

The LMS can also be used to observe student participation online, evaluate student work, exchange material with students, hold virtual office hours or classes, manage groups or teams, anonymously deliver student evaluations and grades, and provide for wikis or blogs. One study found that students identified the online grade book and announcements as most useful (Amrein-Beardsley et al, 2007). In this study, students appreciated timely posting of assignment grades, found it helpful to monitor their progress, and felt more college instructors should use the tool.

A web-based LMS should have the capability to link transparently to other web resources such as educational games, simulations, or other resources. Often a teacher will collect a number of resources in an organized fashion within the LMS, known as a learning module. The learning module enables students to accomplish one or more learning outcomes by performing a series of activities in an organized fashion. An LMS may be open-source, purchased for a license fee, or developed by a teacher to meet specific course requirements. LMS developers are encouraged to adhere to standards by following the Shared Content Object Reference Model (SCORM) to enable

compatibility between LMS (for more information about SCORM, see <http://www.adlnet.gov/scorm>). LMS can have various Web 2.0 capabilities including: blogs, wikis, virtual classrooms, podcasting, Really Simple Syndication (RSS®), and e-portfolios, which are described below.

Blogs

A *blog*, short for *weblog*, provides the capability for the user(s) to post information about a particular topic or to maintain a diary with entries typically posted in reverse chronological order. Currently the fastest growing area of the web, blogs account for around 27% of all Internet use (Ramos & Piper, 2006). In March 2005 there were approximately two million blogs worldwide. Technorati®, a blog search engine, is now tracking over 70 million blogs, and notes about 120,000 new blogs are created worldwide each day. In academic settings, student blogs may be used to share information, to report on events, to practice writing, to develop argumentative and editing skills, and to engage in collaborative design. Students reading blogs may benefit from exposure to a variety of perspectives, values, and life experiences. Ramos and Piper (2006) argue that as the Internet becomes more accessible around the world, so do “the voices in the blogosphere, representing viewpoints from a diversity of cultures, and allowing glimpses into people’s lives that have never before been possible” (p. 571). Blogs can be authored by groups or individuals, and may be authored by instructors or students.

Research on blogs has looked at their personal journal or storytelling function. Herring, Scheidt, Bonus, and Wright (2005) examined a random sample of blogs and found that more than 70% could be classified as personal journals. However, blogs differ from diaries in the sense that they are public and others can comment on blog entries. Stefanone and Jang (2007) studied the personality characteristics of bloggers and observed that individuals high in extraversion and self-disclosure

tend to have larger online social networks with stronger ties. Furthermore, they found that rather than promoting isolation, blogs tend to enhance existing relationships. Research on educational uses of blogs is presently limited. Stefanone and Jang (2007) remark that the potential exists for studying the effects of public accessibility of personal information. Other potential research areas include: the strategic use of blogs by students, student decision-making on blog content, demographic and psychological factors affecting blog behavior, perceived student benefits of blogging, and faculty experiences with the use of blogs as an educational tool.

Wikis

A *wiki* is a writing space that is created and edited by a community of users (Saxton, 2008). Wikis provide the opportunity for educational collaboration where users may create text, link web pages, and edit their work. Wikis enable bottom-up editing where expertise is not limited to a few, but rather emerges from the combined efforts of the many (Ramos & Piper, 2006). Wikis and blogs can incorporate text, images, audio and video. They may be included in an LMS, or available as an open source product or licensed product. Wikis may be private to the class, often by authentication through the LMS, or open beyond the class. It is important to choose a wiki that meets the instructor's educational objectives. Phillipson (2008) identifies several different types of educational wikis, three of which are presented here. For example, he describes the *resource wiki* as an assemblage of a collaborative knowledge base, much like the popular Wikipedia®. The *presentation wiki*, on the other hand, may aim to represent class content to the outside world, and may also highlight the process the class followed to assemble the information. A *simulation wiki* is an interactive environment where exploration, decisions, and branching pathways dominate. Phillipson (2008) describes how students involved in

the Holocaust Wiki Project, used background information to invent a family. Then, using multiple actors, narratives and story lines, they were able to explore and study this historical event through participation in the wiki. Although these and other potential uses of wikis as an educational tool are just beginning to be explored, clearly, wikis have wide ranging potential in student learning.

Podcasts

Podcasting, a term derived from the combination of Apple's *iPod*® and *broadcasting*, involves transferring digital media files, such as audio and video, over the Internet for replay using portable media players and/or personal computers. The function of a podcast is communicative; it is useful for sharing ideas and information, and enables learning to occur in a convenient and portable format. Podcasts appear to have significant potential as a mobile learning tool. Evans (2008) explored the use of podcasts as a method for students to review material after taking a traditional lecture class, but prior to their final examination. In this study, podcasts were not used as an alternative to attendance, but rather as a supplemental method of review. The findings demonstrated that students were receptive to using podcasts and felt that podcasts were more effective than their own textbooks and notes in helping them to learn. Podcasting can also make material more accessible to diverse learners (Cebeci & Tekdal, 2006). Some have even converted entire lecture courses into podcasts, allowing class time to be dedicated to problem solving and group project sessions. However, McGee, and Diaz (2007) advise against transmitting entire lectures through podcasting; instead, they recommend selecting shorter, more pointed segments for transmission which they contend will result in more student use. Villano (2008) provides practical advice for designing better podcasts in areas, such as communication skills, sound quality, length, and editing, to name a few. Additional research is needed on the effec-

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tiveness of podcasting as a learning tool (Evans, 2008). Podcasts have the ability to be syndicated, or subscribed to using an aggregator, such as an RSS® reader.

Really Simple Syndication (RSS®)

An *RSS® reader* receives feeds from content that is frequently updated, such as blog entries, podcasts, and/or news headlines. The reader or *aggregator* will frequently check the content of subscribed sites for updates and will display the new material. It will *aggregate* material from multiple sites into one location so that the user does not have to check multiple sites for updates. The RSS® reader may be incorporated in other educational tools, such as an LMS, wikis, or blog.

E-Portfolios

E-portfolios are an integrated collection of web-based multimedia documents that may include curriculum standards, course assignments and corresponding student artifacts, and reviewer feedback to the student's work (Gathercoal, Love, Bryde, & McKean, 2002). The evolution of web-based technology has made it easier to construct, store, and present evidence of academic work online. This, coupled with a shift toward competency-based education where students demonstrate what they have learned makes electronic portfolio development a growing trend (Johnson & Rayman, 2007). One example is the Digital Notebook project at Georgetown University. Students have an online space for learning, creating, collaborating, and storing the evidence of their work. Maloney (2007) explains: "Our hope is that the *Digital Notebook* will help students track how their thinking developed from their freshman to their senior year, in part by giving them the tools to map connections between the pieces of information they have learned and to share those connections and knowledge with others" (B27). As a practical matter, it is important to choose

an e-portfolio format that meets the instructor's education requirements.

Virtual Classroom

Another possible component of some hybrid courses is the *virtual classroom*. "Virtual office hours" are possible through synchronous interactive chat (the equivalent of Instant Messenger®). The virtual classroom also provides other resources, such as an online "whiteboard" which has the capability to project material onto a "shared" screen which can be viewed by students when they are online. These sessions may be recorded and made available so that students can view them at a later time.

Folksonomies

With this capability, it is possible to add *tags* (keywords) to information providing the user with the ability to manage the information. This is also known as *collaborativetagging* and *socialclassification*. These tools make it possible to categorize and annotate content using tags and to provide the capabilities to associate tags with individuals. A *folksonomy* is user-driven and directly reflects the vocabulary of users. Folksonomies often arise in communities of web users, such as the Flickr® photo sharing site. It is anticipated that they will become popular because they place the responsibility of organization on the user. Folksonomies will likely become an important tool in student learning.

Educational Games

The video game market is currently the third fastest growing segment of the entertainment media market, and is expected to be a 48.9 billion dollar industry in 2011 (Scanlon, 2007). Two areas slated for growth are the so-called "serious games" which are used for non-entertainment or educational purposes, and the innovative attempts to begin

combining gaming with the social networking features of Web 2.0 (Scanlon, 2007). These games (sometimes called Massively Multiplayer Online Educational Gaming) bring multiple players together in a goal-oriented activity that can be collaborative or competitive in nature. Educational games (*edugames*) typically involve role-playing exercises where player-learners work towards achieving educational objectives. For example, games designed to make business deals and build wealth help learners practice strategy and apply knowledge competitively (New Media Consortium, 2007). Another educational game might include virtual immersion (Multi-User Virtual Environments) in a foreign language or culture, where players read directions, travel, and interact with others to complete a quest.

One advantage of these games is that learning may be accelerated when there is an emotional response involved, such as excitement or interest (Waters, 2007). Another advantage is that the virtual world may provide a safe environment for trying new skills and making mistakes. In the virtual world, player-learners often use *avatars* (a computer user's one, two or three dimensional representation of himself or herself). These representations can enable player-learners to save face as they try to improve their skill (Waters, 2007). Research demonstrates that well designed *edugames* have the potential advantage of increasing intrinsic motivation and deepening learning (Moore, Fowler, & Watson, 2007). Although educational gaming is not heavily used today, the proliferation of open-source gaming engines will make it more realistic for developers to produce these tools for educational purposes.

Data Mashups

According to Maloney (2007), *mashups* are websites that “take dynamically changing pieces of information from completely different sources and compile the data into an integrated user experience, one that continues to change and grow as

the underlying information changes” (B26-27). For example, the U.S. Environmental Protection Agency has created a Google® Earth mashup that generates maps of the earth displaying air quality based on pollutants from businesses (New Media Consortium, 2008). It is anticipated that mashups will help educators show their students relationships between large data sets in ways that are meaningful. They can also be used for artistic and creative expression.

Simulations

Because it is impractical or too costly to execute some educational experiments or events, often *simulator* tools are used to represent key elements of a physical or conceptual system. Because of the complexity of many of these systems, it is necessary to limit the number of elements represented. The *simulation* may be used to represent such things as a scientific experiment, a business process, or an engineering system. There are tools available for creating simulations such as those developed by Carnegie Mellon University as a part of their Open Learning Initiative. As these and other tools are developed further, it is anticipated that hybrid courses will play an important role in the evolution of the educational landscape.

BENEFITS OF HYBRID COURSES

Well designed hybrid courses have the potential to benefit students in a variety of ways. Students have access to multiple course resources, and are not limited to learning in a particular physical space. In many ways, hybrid courses shift the focus away from the instructor, and promote a more *learner-centered* model. The extended access to the materials allows students to learn at their own pace. Additionally, students typically participate in online discussion and networked shared learning. So and Brush (2008) found that students who perceived high levels of collabora-

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tive learning in their course tended to be more satisfied with their hybrid experience. Building community, having exposure to other points of views, expressing ideas, and giving and receiving peer feedback are important aspects of hybrid courses. Students also benefit from practicing technical and online skills they will need upon entering the workforce.

Marcketti and Yurchisin (2005) emphasized that undergraduates preferred the hybrid format to traditional offline format, and to a course that had exclusively online elements. Some argue that a good hybrid design can result in better student learning of past course objectives and achievement of new objectives. DeNeui and Dodge (2006) observed a significant positive correlation between students' usage of online components and their success in the course. In their study, those who used Blackboard® more frequently scored better on exams than those who used it less frequently. Furthermore, research using a blind review process demonstrated that students in well-designed hybrid courses completed projects that scored between 10-12% higher grades than those written by students in lecture format classes (Martyn, 2003). Also, well-designed hybrid courses add new learning outcomes, such as life-long learning and team-based learning skills. Institutions with increasing enrollments and limited physical space may find that reducing in-class time can lead to more effective utilization of classrooms and meet the greater demands for education (Olapiriyakul & Scher, 2006).

CHALLENGES OF HYBRID COURSES

Developing new methods of teaching takes motivation and an investment of time. When considering hybrid courses and the use of social software tools, it would be worthwhile for educators to conduct a *Strengths, Weaknesses, Opportunities and Threats* (SWOT) analysis of the objectives

of the project. This will provide an opportunity to consider the various factors that are either favorable or unfavorable. The results of the analysis will be unique to the faculty member and the course involved. There are several good models for moving to a hybrid mode on various university websites. Also, some learning modules have been developed by universities and are freely available for use by other universities. The efforts of Carnegie Mellon University and the Massachusetts Institute of Technology (MIT) are noteworthy. Other modules are generally available on the Merlot.org website, and there are commercially developed products.

In addition to the specific technical aspects of the LMS software and other technology, faculty may need training in pedagogical principles that apply to hybrid courses. Training may include understanding the impact of various learning styles and principles, creating learning outcomes, and designing appropriate online content, assignments and assessment methods. Faculty members need institutional support in the form of incentives or release time from teaching to take on the additional work that comes with converting a face-to-face course into one with an online component (Grosjean & Sork, 2007). They also need access to faculty development professionals who have technical and pedagogical knowledge, as well as awareness about how to facilitate compliance with the Americans with Disabilities Act (ADA). Some of the other challenges that faculty and administrators should consider follow:

1. Faculty who are using hybrid mode will find it beneficial to explain to students how the use of this approach will help to achieve specified learning outcomes. In other words, explaining *why* they are participating in new educational activities is helpful. "Today making the transition from passive to active learners means engaging them [students] in the conversation from the beginning" (Moore, Fowler, & Watson, 2007, p. 52).

- Because this may be a new experience for the students, they will also need training and rules for professional behavior (“netiquette”) in this environment.
2. The skills of research, critical thinking, and evaluation will be increasingly important to students who have unprecedented and instant access to user-created content of varying quality (New Media Consortium, 2007).
 3. Most student evaluations of teaching effectiveness instruments were designed to assess face-to-face instruction, focusing primarily on an individual instructor. In hybrid courses, a broad spectrum of elements shapes the learner’s experience (Grosjean & Sork, 2007). Some of these include the technology itself, the design of content, the organization and integration of materials, and even the faculty member’s ability to moderate an online community. Methods of evaluating instructors may need to be modified to assess the instructor as a designer and facilitator of an interactive learning environment. In this learning environment, teaching excellence is becoming more multifaceted (Hartman et al, 2007).
 4. Because faculty may be using the web and commercial products, they need to be aware of the Family Educational Rights and Privacy Act (FERPA) requirements as well as copyright and intellectual property requirements when using the products of others, including the copyright and intellectual property rights of their students.
 5. Hybrid courses emphasize more self-regulated learning on the part of students. Although this develops students’ active involvement, the research by Aycock and colleagues (2002) suggests that students’ poor time management skills can be an obstacle. Understanding student motivation, appropriately pacing workload, providing sequential tasks, and having discussions about students’ self-directed learning roles may be helpful.
 6. It is also useful when implementing new instructional methods to provide students with opportunities for regular feedback. Grosjean and Sork (2007) recommend that instructors should be prepared to change aspects of their hybrid course if something is not working as intended. Evaluation, feedback, and reflection are necessary to make adjustments to hybrid courses over time.

FUTURE TRENDS

Although there is extensive research on students’ satisfaction and perceptions of learning, only a few empirical studies have examined the influence of hybrid course technology on objective measures of student learning (DeNeui & Dodge, 2006), and more outcome-based research is needed. As a result, professional conferences and workshops related to hybrid learning are increasing in number and quality, with the non-profit Sloan Consortium (Sloan-C) as one of the leaders (<http://www.sloan-c.org>).

Shih, Feng, and Tsai (2008) examined research and trends in the field of e-learning between 2001-2005 and concluded that studies related to instructional approaches, information processing, and motivation will likely be influential topics for subsequent research. They predict that an essential issue in future research will be “how to maintain and enhance students’ learning motivation and teachers’ teaching motivation in a constantly changing educational environment” (p. 965). Additionally, they contend there may be enhanced “personalization” of education, whereby increased variety in the ways in which teaching occurs can accommodate various learning styles.

Many of the Web 2.0 tools now available have been developed with little thought about using them for educational purposes. It is anticipated that the future will bring seamless ties between these tools allowing them to be geared more towards

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educational applications. For example, although not used significantly in education currently, it is anticipated that social resources, such as Second Life®, will be incorporated as a learning tool along with social software networks that were developed primarily for industrial use.

According to the most recent *Horizon Report* (New Media Consortium, 2008), as globalization increases, online collaboration webs and the tools that support them are also expected to increase. Collaborative webs are networking sites that interested individuals or groups can access to foster educational sharing capabilities. Some examples include San Francisco State University's Digital Information Virtual Archive (diva.sfsu.edu) and Skoolaborate® (www.skoolaborate.com).

As ubiquitous as the broadband mobile phone has become, the varied features of it have also become more common: e.g., music playing, recording, camera and video capability, and photo storage. It is anticipated that these portable multimedia features will also be increasingly used for educational applications (New Media Consortium, 2008).

CONCLUSION

This chapter has discussed the benefits and challenges of hybrid courses that blend face-to-face instruction with online learning and opportunities provided by the introduction of web-based social interaction technologies. The best hybrid courses are based on thoughtful design and utilize active learning, both in online education and interactive face-to-face meetings. The success of a hybrid course will be enhanced by: (a) effective planning and integration of the face-to-face and online activities to achieve the desired learning outcomes for the course; (b) choosing the appropriate tools to achieve the desired outcomes; (c) faculty preparation to enable the effective use of the new learning environment; and (d) developing a plan positioning students to understand their new role

and how they can be successful in it. If a hybrid course is designed properly, the strengths are likely to be: (a) increased learning by students; (b) more engagement by students because the course can be designed to allow them to bear responsibility for its success; (c) more enthusiastic participation by the students; (d) an opportunity for faculty to participate in a completely new way of teaching by having student-centered activities; and (e) ultimately a course that is more organized. The use of technology and development of hybrid courses will continue to evolve to meet the needs of contemporary students, faculty, and institutions of higher learning.

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KEY TERMS AND DEFINITIONS

Asynchronous Discussion Board: An online bulletin board where users may post and respond to messages in *forums* which are specific topic areas for discussion. Subordinate discussions within a forum are often called *threads*. Since users do not have to be online at the same time, they can enter the discussion board according to their own schedules.

Avatar: A computer user's one, two or three-dimensional representation of himself or herself in a virtual space (See Multi-User Virtual Environment).

Blog: Short for *weblog*, a *blog* provides the capability for the user(s) to post information about a particular topic or to maintain a diary with entries typically posted in reverse chronological order.

Electronic Portfolios or E-Portfolios: An integrated collection of web-based multimedia documents that may include curriculum standards, course assignments and corresponding student artifacts, and reviewer feedback to the student's work.

Folksonomy: Also known as *collaborative tagging* and *social classification*, *folksonomies* make it possible to categorize and annotate content using *tags* (keywords) and to provide the capabilities to associate tags with individuals.

Learning Management System (LMS): A software application or web-based technology used to develop, implement, and evaluate student-learning activities. Examples of Learning Management Systems include Blackboard®, Webboard®, or WebCT®.

Multi-User Virtual Environment (MUVE):

A virtual environment that enables simultaneous participants to represent themselves with avatars, interact with other participants and digital artifacts, and practice building skills or solving problems that have applications in real world contexts.

Podcast: A method of publishing digital media files for transfer to and playback on a computer or a portable media player.

Web 2.0: An improvement in the application of the web infrastructure to support communities

on the web and deliver services such as *wikis*, *blogs*, *folksonomies*, and other social interaction technologies.

Wiki: Software that provides the infrastructure for faculty and/or students to collaboratively develop and link Internet web pages. Each *wiki* has its unique characteristics, but most have tracking of individual effort and recovery of past versions.