Blended Learning

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Invited Paper

INTRODUCTION

Blended (or hybrid) learning is a way through which instructors may use various forms of delivery to enhance their students' learning. Many institutions widely blend their course offerings preferring this mode over single one to give more choices of interaction and participation to their clients and enable instructors to select tools and components from diverse 'pool' of blending options. This is particularly important for science education when it comes to practical skills. The students need to acquire these skills while practicing them in laboratory sessions supported by pre-post online interactions to measure their achievement of instructional objectives.

Definition

Blended learning can be defined as a delivery method that combines a variety of traditional and non-traditional instructional techniques, tools, and approaches to design, develop, manage and evaluate the learning process; and a blended program is one where between (30-79%) of the program content is delivered online (Allen, Seaman & Garrett, 2007).

It is a combination of students' needs, technological feasibility, and a professional preference toward face-to-face instruction to provide a perfect environment that combines the best features of face-to-face, videoconferencing, and online instruction. These media are designed to complement each other and promote learning processes (Khan, 2005).

The Benefits of Blending

1. *Flexibility*: it offers self-learning modules that may be completed by the student at his/her pace and/or time to enhance/substitute the classroom instruction.

2. *Accessibility*: combining various delivery methods with instructor-led instruction should extend the students' access and choices to learn knowledge from any location until face-to-face meetings take place.

3. *Feasibility*: while it is sometimes expensive to produce Web-based content of high quality, live face-to-face instruction also involves expensive facilities, transportation, buildings, and payments. Blended learning can reduce and balance these costs to the minimum by combining various delivery methods that use simple self-paced materials, documents, case studies, recorded events, text assignments, and PowerPoint presentations.

Design and Use of Blended Learning (ASSURE Model)

1. Analyze institutional and pedagogical contexts.
- Blended learning designers should analyze the preparedness of the institution in terms of: technical/financial infrastructure (e.g. Hardware, software, servers, bandwidth, security), administration and personnel, and ethical/political philosophy (e.g. copyright regulations, admissions procedures, and course offerings).
- Designers should look into learners' characteristics and needs (audience analysis) to know their demographic information, academic levels, geographic distribution, prior knowledge, and anxiety level. They need to identify the ethical issues involved in delivery processes. Issues such as equal opportunity, cultural diversity, and internet accessibility should be addressed in a way that does not offend learners. Special needs learners should be provided with alternate opportunities to learn.
- Designers should also determine learning content best to be delivered (content analysis) and analyze it in line with the pre-determined learners' characteristics. They should determine concept sequence, design, development, and strategies in a blended learning method (Dziuban, Moskal & Hartman, 2005).
- Designers need then to state learning objectives (goal analysis). These objectives are behaviorally described to promote active participation, discussions, and critical thinking.

2. Select appropriate instructional modes and forms.
- Blended learning designers should develop their blended delivery techniques in a way that enables every learner to go through the same experience of the blended components.
- Instructional modes such as: interaction, discussion, moderation, demonstration, tutorials, simulations, role-playing, modeling, debate, field trips, case studies, and lectures presentations can be used to construct learning processes in the following forms (Dziuban, Moskal & Hartman, 2005; Khan, 2005):
  - **A.** Blending offline and online learning: This form is a combination of traditional classroom (offline) with Internet/Intranet (online) learning as in the case of a Web-based program and an instructor-led classroom.
  - **B.** Blending self-paced and live, collaborative learning: This form involves either learner-controlled on-demand self learning or dynamic knowledge-sharing collaborative learning among many learners. Both include a regulatory change or new product followed by a moderated, live, online, peer-to-peer discussions.
  - **C.** Blending structured and unstructured learning: A combination of active

conversations and documents from unstructured learning events with on-demand structured knowledge repositories.

D. Blending custom content with off-the-shelf content: Off-the-shelf generic self-paced content can be customized with a blend of live experiences (classroom or online) or with content customization. Using off-shelf standardized objects opens the door to improve the user experience while minimizing cost.

E. Blending learning, practice, and performance support: Supplementing learning (beginning a new job-task) with practice (using job-task simulation models) and just-in-time performance support tools that facilitate the appropriate execution of job-tasks. New tools provide packages of computer based work, collaboration, and performance support tools.

3. Select appropriate technology and resources.

- Blended learning designer, at this stage, need to create blended environment and tools of delivery and select from myriad combinations of technologies that can be used in blended learning environments and best fit the learning prescribed modes/forms. These technologies may include: learning management system, content management system, reusable learning objects, wireless technologies, peer-to-peer collaboration tools, digital libraries, online games, assistive technologies, digital portfolios, e-books, intelligent agents, tablet PCs, virtual worlds, language support, Weblogs, Wikis, massive multiplayer, handheld devices and wearable technologies in addition to physical classroom and face-to-face media/technologies (Bogle, Cook, Day & Swan, 2009). For example, scientific concepts such as velocity, momentum, and friction should be designed in a way that utilizes the technological innovation and multimedia abilities in forms of learning objects.

- Designers should also perform the interface design and ensure its usability in order to facilitate interactivity through the user interface. They need to ensure that the user interface integrates and supports various components (such as: structure, navigation, arrangement, and help) to enable the student to toggle between them.

- Designers need to organize and offer various offline and online resources for students. These resources may be provided in forms of: consultation, private tuition, FAQs, email/chat help, library, and website links.

4. Use resources, and methods.

- At this stage, the management of the blended learning should be conducted. Infrastructure, facilities, and logistics to use and implement blended delivery modes should be secured. This involves more work than that of a single mode delivery (Kirwin, Swan & Breakwell, 2009).

- The following processes such as: LMS administration, materials upload, students' registration and enrollment, and class scheduling and allocation should be completed at this stage too. Since learners in the online part of the blended education are located in different time zones, implementers (instructors, facilitators, moderators, tutors, technicians) should ensure their accessibility to servers.

- Instructors should deliver the course materials for the students in blended mode to achieve intended learning outcomes using traditional and online instructional strategies considering factors such as: learner outcome satisfaction, balance of delivery, tutor and peer engagement, workload, selected technologies, perceived career benefit, and student satisfaction.

- The on-campus part of the blended education should be considered as a critical aspect of the development of a learning community. While such communities could be developed online, face-to-face interaction with other students and the implementers greatly facilitate communication and support experience during the online part. Online materials can be learned in a synchronous or asynchronous format. Instructors may consider a number of adjustments to further enhance the communication aspects of the blended learning (Bonk & Graham, in press).

5. Request interaction/participation.
   - In this stage of the blended instructional process, activities should focus on learners' engagement through reports, presentations, discourses, small group debates, and threaded discussions.
   - Depending on the blend format, students should interact in face-to-face or online environments with their colleagues and instructors.

6. Evaluate and review.
   - At this stage, instructors should qualitatively and quantitatively asses their students' achievement of learning outcomes, performance, participation in the discussions, contribution to activities, and understanding of concept explained (Ramsey et al., 2009).
   - Designers and implementers should evaluate the usability of the blended learning, the effectiveness of its components, and the feasibility of the delivery mode used.

Summary of the Literature Findings

Research evidence shows that (Allen, Seaman & Garrett, 2007; Freddolino, Blaschke & Rypkema, 2009; Kirwin, Swan & Breakwell, 2009):

1. *A dramatic rise in using blended learning approaches to occur in the coming years* prevailing especially in workplace learning settings where it acts as a replacement for or extension of face-to-face environments.
2. *Blended learning is generally not part of an institutional transition strategy* from face-to-face to fully online courses, but rather a discrete option which institutions choose on its own merits.
3. *There was a small but significant grade improvement for blended learning courses over entirely online courses* but it is difficult to attribute this grade increase to the mode of course delivery.
4. *The mode of delivery of course content does not affect student satisfaction or the ability of students to perform well in formal assessment.*
5. *There are always technological challenges* and the blended learning must always seek to be on the cutting edge of technology, at the same time providing support for students and instructors.

CONCLUSION

While learning technologies and delivery media continue to evolve and progress, it seems that organizations (corporate, government, and academic) favor blended learning models over single delivery mode programs. Courses with reduced classroom meetings or seat time will grow as this reduces the organizational physical and financial burdens and

simultaneously can increase learning outcomes. While the role of the instructor will definitely continue to shift with various instructional skills including coaching, mentoring, and counselling, the next few years may also witness a specialist certificates and perhaps even postgraduate degrees for blended learning instructors. Learners, on the other hand, will be less tied to traditional calendars for learning where they will be situated in a company or other type of work setting and report back daily or weekly through web cams, asynchronous discussions, desktop videoconferencing, instant messaging, and wearable computing devices (Bonk & Graham, in press). This means that blended learning will increasingly involve authentic, on demand, and mobile learning mode by the use of handheld devices; especially cell phones to bring pictures, charts, graphs, animations, and video-clips that the learner can manipulate through online case-learning, scenario learning, simulations and role play, and problem-based learning.

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