

Blended Learning and Geriatrics Education

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Abstract

Implementing a competency-based medical school curriculum creates formidable challenges for geriatrics educators charged with the task of training physicians competent in the care of elderly persons. This chapter reviews the use of a blended-learning strategy for geriatrics education, which combines face-to-face methods with innovative e-learning technologies emphasizing self-instruction. Evidence indicates that the shift from a traditional approach centered on the teacher to one that is centered on the learner may result in improved satisfaction and cost-effectiveness as well as a more effective educational experience. The strategy proceeds sequentially, beginning with the identification of competencies and followed by the formulation of learning objectives, the development of assessment tools, and the ultimate construction of a blended-learning approach. At this stage one must first identify the appropriate instructional methods and then incorporate e-learning, which offers innovative and potentially cost-effective presentation and distribution methods. The effective delivery of a blended-learning strategy requires establishing a learning management system as the e-learning platform. Evaluation of educational impact follows a multilevel approach that gives attention to aspects of satisfaction, educational outcomes such as knowledge, skills, and attitudes, and cost-effectiveness.

Introduction

Medical schools face great challenges in preparing physicians who will provide competent care to growing numbers of elderly persons. Because medical schools and governing agencies have begun to mandate geriatrics training for undergraduate medical students, mainstreaming geriatrics into academic medicine has become paramount if educators want to ensure that all graduating medical students have the requisite knowledge, skills, and attitudes to care for an increasingly frail elder population. Both time and resources are scarce in education, and geriatrics medical school educators must seek out innovative cost- and time-effective educational approaches. This chapter presents a rationale and framework for one of these innovative educational approaches—a blended-learning approach to the geriatrics education of medical students that couples e-learning with traditional methods of learning to provide students and educators with flexible pathways for achieving desired educational outcomes.

This chapter first offers a rationale for using a blended-learning strategy in geriatrics education. A basic definition of blended learning and some examples of this strategy are provided. The role of learning management systems in delivering blended learning is examined, and finally, evaluation approaches are reviewed to assess the impact of the blended-learning approach.

Rationale for Using Blended Learning in Geriatrics Education

Nationwide, there is a shortage of health-care professionals trained to meet the special needs of older adults. While the number of elderly is increasing at a dramatic rate, it is estimated that there will be 2,730 fewer geriatricians in 2004 than there were in 1998 and that this number will continue to decline in the coming decade (ADGAP, 2003a). In the face of this shortage of geriatrics expertise, medical schools and governing agencies have begun to mandate geriatrics training for undergraduate medical students. However, geriatrics educators and administrators face formidable obstacles to the development and implementation of geriatrics curricula that are student-centered and not teacher-centered, including the lack of curricular time, the scarcity of academic geriatricians, the

increasingly decentralized nature of training venues, and the switch to competency-based education.

Efforts to enhance geriatrics training must first address the lack of curricular time devoted to geriatrics education. Medical school schedules are already overextended, with many disciplines vying for additional time, governing agencies setting more stringent educational requirements, and advances in the field of medicine that demand the incorporation of increasingly complex learning materials. There is an actual and projected deficit in the number of geriatric medicine faculty required for meeting the undergraduate educational needs in this field (Chiang, 1998). Unfortunately, this shortage will not likely be resolved soon despite the best efforts of academia and the federal government, although blending e-learning with traditional educational approaches may provide a pragmatic solution to the dilemma posed by limited resources. For example, e-learning components can be implemented before, and thus maximize the benefit of, a preceptor-led teaching activity. When students get such advance preparation, the limited time they then spend in the presence of a geriatrics faculty member can be concentrated on activities that foster humanistic and communication qualities, such as bedside teaching, and on preceptor-assisted activities, where faculty serve as role models for medical students in diverse training settings.

The expansion of training venues and spectrum beyond the acute care hospital to nontraditional settings such as nursing homes, hospice care, home-based care, and other community settings poses an additional challenge to designing and developing effective instructional strategies (ADGAP, 2003b). Considerable pressure has resulted in the frequent implementation of one-month-block mandatory rotations in geriatric medicine, but most of these experiences are inconsistent and discontinuous and require complex logistic arrangements (Warshaw, Bragg, & Shaull, 2002). Bringing e-learning into play will allow geriatrics educators to reach medical students across training venues regardless of distance and offers the further advantage of standardization of curricular components.

Another conundrum for geriatrics educators is the move away from the traditional curriculum toward competency-based education, which is by definition focused on the student, not centered on the teacher. Competency-based curricula seek to ensure that students attain specific knowledge, skills, and attitudes. The increased emphasis on accountability requires that geriatrics faculty devote substantial time and effort to

restructuring their teaching and assessment strategies. But the shift to competency-based education can be aided by blended initiatives that offer students multiple ways to learn and excel, and possibly allow each student to tailor the learning experience according to an individual learning style.

From this discussion it is clear that a coherent strategic approach offers the best opportunity to meet the challenges now faced by geriatrics educators. Blended learning is a key ingredient to the success of such an approach.

The Concept of Blended learning

Background and Definitions

Blended learning is understood as the use of a traditional instructional strategy (usually face-to-face, teacher-led training) combined with "e-learning approaches" (Masie, 2002). As will be seen later, an important premise in this approach is that the instructional methods themselves (lectures, workshops, small-group discussions, problem-based learning, etc.) are independent of technology. The novel contribution of blended learning lies in its enhancement of instructional methods through the use of e-learning methods, first as presentation and then as distribution (Mantyla, 2001). For example, a teacher can elect to present a lecture (instructional method) either in person or by video (presentation methods). The students can then access the lecture in videotape format or through the Internet or an Intranet (distribution methods).

The basic concept of blended learning, or combining diverse teaching methods, is not novel in geriatrics education. Geriatrics educators have long used multiple delivery methods to facilitate learning by complementing classroom-based methodologies with assigned reading materials, group projects, or small-group discussions. However, in most cases, these strategies have been instructor-centered rather than learner-centered. A truly blended-learning approach to education potentially combines the best aspects of e-learning with the best of teacher-led training. Some examples relevant to geriatrics education include:

- A lecture about falls enhanced by a Web-based tutorial on gait and balance assessment

- A lecture on basic surgical techniques complemented by a computer-assisted simulation involving suturing
- A small-group discussion on environmental issues in the home augmented by an interactive CD ROM on home-safety assessments
- Bedside teaching with heart disease patients preceded by self-study with audiotapes of cardiac sounds
- A workshop about communication with elderly patients assisted by a videotape demonstrating how to deliver bad news
- A teleconference about diabetes mellitus in the elderly followed by a small-group discussion on treatment options
- A lecture about pressure ulcers incorporating a multimedia pictorial of various types of ulcers

In some cases, as shown by the above examples, the newly integrated e-learning component takes the form of self-instruction aided by technology. An important aspect of the blended-learning strategy is its reliance on newer presentation and distribution technologies that form part of what we know as the e-learning approach. One of the main advantages of e-learning is that it can be tailored to meet the needs of individual learners. A prime example is a Web-based tutorial on balance and gait assessment developed at the University of Miami School of Medicine that allows students to progress at their own pace, choose the parts of the tutorial they want to study, and revisit the content when desired (Ruiz et al., 2002a).

How Effective Are Blended-Learning Approaches?

Recent evidence suggests that blended-learning approaches that combine e-learning and traditional methods of instruction in a systematic way substantially increase productivity in corporate environments and seem to be a far more effective approach to training than single-delivery methods (Thomson Job Impact Study, 2003). Several studies have been conducted on the effectiveness of blended learning in the area of medical and geriatrics education (Andrews, Schwarz, & Helme, 1992; Elves, Ahmed, & Abrams, 1997; Hallgren et al., 2002; Lipman et al., 2001; McDonough & Marks, 2002; Mehta et al., 1998; Ruiz et al., 2002a; and Ruiz et al., 2002b). Findings from these studies provide evidence of

learner satisfaction, knowledge improvements, and cost and time-savings.

The future of blended learning depends largely on learners' reactions. Learner satisfaction with the components of blended learning is the first level of evaluation. If components are not well received, students will not be motivated to learn. While we have ample feedback from students on traditional learning methodologies, less research has been done on students' satisfaction with e-learning components. Mehta et al. (1998) conducted a prospective randomized study in which second-year medical students were assigned to either an experimental group exposed to both classroom and Web-based materials or a control group with access to the Web modules only after conclusion of the experiment. The post-test showed no significant performance difference between the two groups. While in the final survey only one percent of students believed that Web-based education could completely replace traditional teaching, 75 percent considered Web-based education an important additional educational resource. Ruiz and colleagues (Ruiz et al., 2002b) examined the usability of a computer-assisted training module on balance and gait assessment completed by second-year medical students. This module was used to prepare students for a preceptor-assisted, small-group session. Students favorably rated various aspects of the module's usability including navigation, pacing control, and ease of use of the self-tests.

The next step is to examine if a blended-learning strategy has additional benefits when compared with traditional methods or with just an e-learning approach. Several studies have documented that blended learning leads to greater improvements in knowledge than single-delivery methods. Fourth-year medical students receiving a "traditionally delivered" two-week geriatrics medicine curriculum were arbitrarily assigned to a group with or without a computer-assisted learning program. Students receiving the blended strategy demonstrated greater improvement in scores on a test covering the management of patients with dementia (Andrews, Schwarz, & Helme, 1992). Lipman et al. (2001) conducted a randomized study comparing a traditional classroom-based clinical ethics course with and without an Internet-based discussion component. Sophomore medical students' understanding of ethical analysis was significantly higher for those in the blended course than in the traditional course. In a randomized study by Stanford et al. (1994), first-year medical students who performed cardiac dissection and then viewed a com-

puter-based application did significantly better when tested with computed tomographic and cardiac cadaver specimens than those students using the computer program or dissection alone. A Web-based interactive teaching tool complementing a packet of paper materials to assist first-year medical students' learning in a gross anatomy class was more effective in improving students' scores on anatomic landmark exams than paper materials alone (Hallgren et al., 2002). Elves, Ahmed and Abrams (1997) assigned third-year medical students to either a group with daily formal teaching or a blended-learning group that combined the face-to-face method with a computer-assisted training program in urology. When students were evaluated with a multiple-choice knowledge questionnaire, students in the blended-learning group performed significantly better than those in the face-to-face group.

Although incorporating e-learning in a blended-learning approach requires an initial investment of resources to develop the digital component, in the long run blended learning can save educators valuable time. McDonough and Marks (2002) conducted a randomized controlled study in which all participating third-year medical students had a 20-minute group lecture on basic concepts and historical aspects of exposure therapy for phobias. The students were then randomly assigned to either a computer-assisted training module or a face-to-face small-group tutorial, a traditional learning extension of the classroom-based approach. Students in the computer-instruction group scored as well on the multiple-choice-question post-test as those receiving the small-group tutorial. Although students reported more enjoyment with the small-group sessions, face-to-face teaching required five times more preceptor time (McDonough & Marks, 2002). The study by Ruiz et al., (2002a) found that students could learn some of the basics of balance and gait assessment by completing the computer-based tutorial. The tutorial freed up some of the geriatrics educators' time and allowed the time spent in small-group activities to be used more efficiently (Ruiz et al., 2002a).

New initiatives in blended learning are being conceived and implemented on more global levels. An example is the recently promoted international virtual medical school, a consortium of several medical institutions advocating the use of blended-learning approaches combining e-learning and face-to-face approaches to medical education (Harden & Hart, 2002). Such large-scale initiatives are particularly desirable in geriatrics education, because resource sharing among institutions can at least

partially ease the dilemma of shortages of both geriatrics expertise and resources.

With blended learning, each element of the curriculum can be provided via the most suitable method. Given the variety of knowledge, skills, and attitudes required for competency in geriatrics, this flexibility in delivery is particularly important. Students can use computer-based training to learn about an area and then computer exercises and simulations to practice some elements of task performance. Time with instructors, other students, and patients will be used more efficiently, with the student asking questions, practicing task performance in the real world, and getting feedback and guidance from the instructor. Likewise, geriatrics educators can make better use of their time with students by focusing more on activities that foster role-modeling and humanistic qualities, essential instructional elements that are not well replicated, even by the most sophisticated computer software.

Blended Learning and Other Instructional Strategies

Until recently, most medical educators have used the traditional instructor-centered lecture approach as their predominant instructional strategy. Instructors are beginning to realize the limitations of the basic lecture format; it is usually a one-way process, in which the student is completely dependent on the instructor for the material presented and the timing of the presentation. However, traditional and blended learning are just two of the five major instructional strategies (see Table 12.1), which also include curriculum-integrated modular learning, distance learning, and electronic performance support systems. All five strategies have been used to a certain extent in the medical education field. Distance learning has not gained popularity, but electronic performance support systems (EPSS) have a part in clinical training in several academic institutions.

The instructional methodology itself—traditional methods, e-learning, or a combination—is not as vital as a well-developed instructional design process (Gagne & Medsker, 1996). Blended learning can be innovative and successful if it relies on systematic analysis of the learning task, the characteristics of the learner, and cost-effectiveness in relation to the best instructional strategy for specific learning objectives (Reiser & Gagne, 1983; and Gagne & Medsker, 1996). In contrast to the mainly teacher-

centered traditional strategy, blended learning shifts the emphasis towards the learner. The e-learning component of blended learning accomplishes this goal by facilitating self-instruction. Empowering students with self-instruction approaches makes them active participants in the educational process and promotes lifelong learning (Spencer & Jordan, 1999).

Selecting the Right Components for e-Learning

There is no revolutionary change in the instructional/pedagogical methodologies of medical education when using the e-learning components of blended learning. The change lies in the incorporation of new e-learning presentation and distribution technologies. For example, a lecture (instructional method) can be offered face to face or via a teleconference (presentation method) and disseminated through CD/DVD-ROMs or the Internet as a Web cast (distribution method).

To achieve the right blend of e-learning and traditional methods, instructional designers must keep in mind the ultimate goal — student competence. A well-defined instructional design process (see Figure 12.1) is a prerequisite for reaching this goal. The competency-based approach to curriculum design begins with determining the competencies (knowledge, skills, and attitudes) a medical student is expected to acquire. The next step is to identify measurable learning objectives that would indicate whether a student has achieved those competencies.

After these objectives are established, a method of testing for those competencies is designed. Finally, educators design and develop a set of instructional activities so that students can achieve the identified objectives. It is precisely at this point that identifying the best-suited instructional methods becomes part of a rational blended-learning strategy. There are multiple pedagogical and instructional models that prescribe approaches to choosing the right instructional methods to achieve the specified learning objectives (Gagne, Briggs & Wager, 1992). After choosing a particular blended-learning strategy, a sequential step-by-step process may provide a structured approach to identifying the most coherent sequence of instructional, presentation, and distribution methods (see Figure 12.1), which in many cases will incorporate e-learning technologies.

Figure 12.1. Blended-Learning Flowchart.

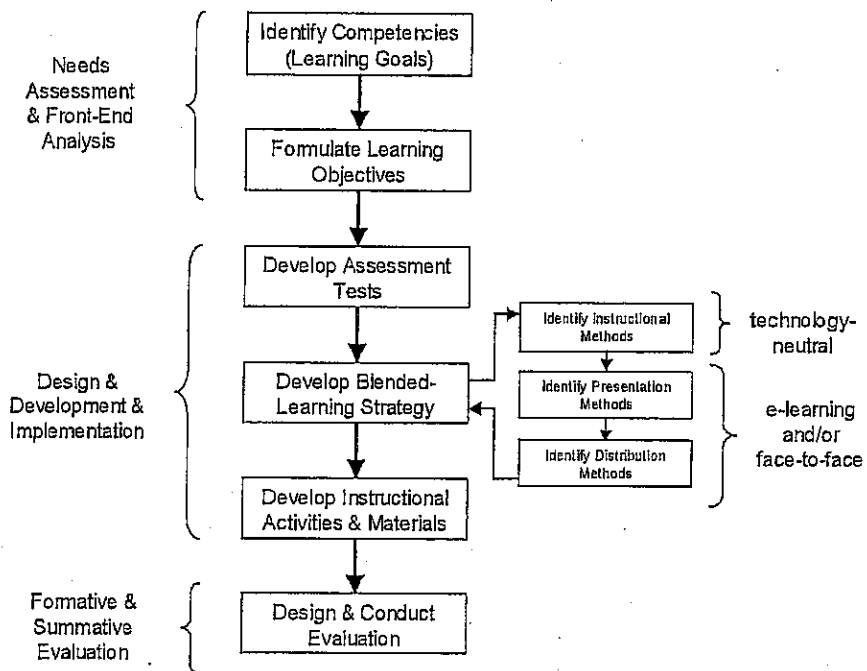


Table 12.1. Types of Instructional Strategies

e-Learning Approach	Description and Examples
Traditional Learning	<p>Learning that is mediated by an instructor, typically in a classroom/clinical setting, and makes use of all the learning tools associated with the classroom environment.</p> <p><i>A lecture to medical students about functional assessment in the elderly</i></p>
Blended Learning	<p>Information-technology (e-learning) approaches combined with face-to-face training.</p> <p><i>Geriatrics fellows are trained to perform cognitive screenings through the use of a face-to-face workshop and self-instruction with a learning object on the Mini-Mental State Examination (MMSE).</i></p>
Curriculum-Integrated Modular Learning	<p>Part of a broad-based curriculum, with some modules completely managed through face-to-face delivery, and others delivered through information technologies.</p> <p><i>During a medical student clerkship an ethics course is completely delivered face-to-face, whereas a legal medicine course is delivered through self-instruction with a computer-based training module. In contrast to blended learning, there is no attempt to weave traditional learning and e-learning in the same course.</i></p>
Distance Learning (Pure e-Learning)	<div style="display: flex; align-items: center;"> <div style="font-size: 3em; margin-right: 10px;">}</div> <div style="margin-right: 10px;"> <p data-bbox="500 1249 621 1333">Stand-Alone Synchronous Programs</p> <p data-bbox="500 1354 638 1438">Stand-Alone Asynchronous Programs</p> </div> <div style="margin-left: 10px;"> <p data-bbox="683 1186 1175 1323">Totally technology-based learning, but delivered at a prescribed time.</p> <p data-bbox="683 1323 1175 1323"><i>Physicians take an instructor-led online course on human resource management as part of an online master of business administration (MBA) program.</i></p> <p data-bbox="683 1354 1175 1428">Learner given complete freedom to choose to engage in a learning program, interacting only with technology.</p> <p data-bbox="683 1428 1175 1564"><i>A physician revisits an online module on the federally mandated Health Insurance Portability and Accountability Act (HIPAA) regulations as part of an online MBA (master of business administration) program.</i></p> </div> </div>
Electronic Performance Support Systems (EPSS)	<p>Learning in the natural course of performing a job; learning incorporated in the workplace experience.</p> <p><i>Internal medicine residents receive electronic alerts when prescribing exceedingly high doses of a medications to elderly patients.</i></p>

Instructional Methods

The term “instructional methods” refers to how the information is taught or what needs to be done to trigger learning (Piskurich & Sanders, 1998). Examples of instructional methods include lectures, small-group activities, question-and-answer sessions, problem-based learning, debates, case studies, tutorials, simulations, role-plays, active experimentation, exercises, and games. Instructional methods may lend themselves to a particular delivery method but are generally independent of technology. Role-modeling can be done live or virtually through the Internet. Choosing the right instructional method is a complex process that primarily depends on the intended measurable learning objective, which could be either knowledge, skill, or attitude (Gagne, Briggs, & Wager, 1992), but other factors must also be considered. Although any analysis of the considerable number of models and algorithms guiding this process is beyond the scope of this chapter, four essential factors may assist educators in the rational selection of the best methods (Gagne, Briggs, & Wager, 1992; and Stolovitch & Keeps, 2003):

Expected learning outcomes: The knowledge, skills, and attitudes we expect the student to achieve. Improving students’ knowledge about dementia can be done through a lecture (face-to-face or Web-based). However, if the goal is to improve students’ attitudes toward caring for demented patients, role-modeling of effective communication with demented patients and role-playing may be more effective.

Feasibility: This consideration refers to whether a desired method is viable given existing resources and limitations. The preferred instructional method may be a small-group discussion, but some institutions may lack the trained faculty to facilitate small-group sessions.

Acceptability: This concept refers to whether the environment and culture of the academic institution and the characteristics of the learners are receptive to this instructional method. Although more institutions are implementing problem-based learning activities, many institutions remain reluctant to accept this instructional method.

Economics: This factor refers to whether the methods are the most cost-effective and cost-efficient given institutional resources. Providing Web-based instruction to medical students may not be a viable proposition if the institution does not provide enough computer and Internet access.

Presentation/Delivery Methods

How information is presented to learners (i.e., the instructional method) is termed the presentation, or delivery, method (Piskurich & Sanders, 1998). Some examples include face-to-face (instructor-led), computer-assisted training (CAT), electronic performance support systems (EPSS), interactive TV, chat, audio, teleconferencing, virtual reality, video, multimedia, online help, electronic bulletin board, and reusable learning objects.

Distribution/Media Methods

The medium used to deliver information to learners is the distribution, or media method (Piskurich & Sanders, 1998). Some examples are live (classroom-based), cable TV, closed-circuit TV, audiotape, videotape, CD-ROM, DVD-ROM, Internet, Extranet, Intranet, Local Area Network (LAN), Wide Area Network (WAN), Wireless Fidelity Network (WiFi), satellite TV, tactile-gear simulator, telephone, voicemail, World Wide Web (WWW), floppy disk, e-mail, newsgroup, and listserv. The selection of the presentation and distribution methods is guided by the same factors outlined for deciding on instructional methods. In order for blended learning to succeed, new e-learning presentation and distribution methods must be readily accessible to learners and faculty.

A Learning Management System for Geriatrics

Learning Management Systems (LMS) are critical ingredients for the success of blended-learning initiatives. A LMS is software (running on an Intranet or the Internet) that supports an educational institution in the delivery, management, and administration of learning across the institution. In the context of blended learning, an LMS facilitates the delivery of e-learning content to students and faculty. However, an LMS can serve functions other than the delivery of online instruction. It can simplify and automate administrative and supervisory tasks, track the impact of education on students' achievement of competencies, and act as a repository for instructional resources that can be available to learners and faculty twenty-four hours a day. Some of the key features of an LMS are presented in Table 12.2. The number of commercial LMS systems is in-

creasing rapidly, with between 200 and 300 software packages currently available. Well-known examples include WebCT, Blackboard, Top Class, Angel and Desire2learn. The LMS used for delivery of our blended-learning strategy provides a platform to deliver geriatrics e-learning materials to medical students, geriatric medicine fellows, and nurses in long-term care (Ruiz et al., 2002b).

Evaluating Blended Learning

Evaluation is an important part of any educational program (Wilkes & Bligh, 1999), but programs that involve new information technologies and processes require more evaluation and justification to gain acceptance than traditional instructor-led methods (Friedman & Wyatt, 1997). However, blended learning is an educational intervention, and its evaluation can be confounded by multiple concurrent factors (Wilkes & Bligh, 1999). A multilevel approach to evaluation should consider three important areas: satisfaction, learning, and cost.

Satisfaction: For blended learning to be effective, its different components must be well received by the learner and other stakeholders. Satisfaction depends on usability, efficiency, and effectiveness. The success of any educational resource begins first with how comfortable faculty and learners feel when they use it. Evaluating usability, or user friendliness, may or may not be important with traditional methods of learning, but the task is imperative for new blended-learning methods that often incorporate unproven information technologies. For example, if students are asked to complete a Web-based training module, the evaluation should consider questions about accessibility, ease of navigation, and control of pacing of the module. Ratings of usability are also influenced by the efficiency of different components of the blended-learning process. How much effort (usually measured in time) is required by students and faculty to complete a component? Time-consuming face-to-face teaching sessions might tax faculty endurance, but on the other hand, overly long Web-based modules might result in student disengagement. Finally, the perceived effectiveness of blended-learning components in achieving the specified learning objectives further contributes to satisfaction. An educational component that is not usable, effective, or efficient cannot possibly be evaluated for higher educational outcomes, such as learning.

Table 12.2. Features of Learning Management Systems

Monitoring and tracking of student performance
Testing and reporting results
Management of student records
Evaluation for competency improvement (survey and test builders)
Course scheduling and organization
Online student enrollment and administration
Knowledge, skill, and attitude assessment
Course delivery (asynchronous and synchronous)
Organized access to digital libraries (including learning objects)
Integration of third-party content including multimedia and authoring tools
Collaboration features (e-mail, bulletin boards)
Database support
Personal tools
Support standards (SCORM, IMS, AICC)

Learning: The focus of blended learning in the context of a competency-based geriatrics curriculum is on the attainment of knowledge, skills, and attitudes in the care of elderly persons. It is critical to evaluate the utility of blended-learning approaches to determine if actual learning has occurred. After competencies and specific learning objectives have been identified and appropriate assessment tools developed, we can measure the impact of blended learning on the knowledge, skills, and attitudes of learners. Medical schools have traditionally relied on multiple-choice exams and preceptor ratings for student assessment. Although these methods have become familiar and comfortable for students and faculty, there are major weaknesses in their use for evaluation of learning. Multiple-choice exams have limited professional authenticity. Test items cannot adequately assess the complexities of taking care of a frail elderly person. Preceptor ratings generally have low inter-rater reliability (Newble & Cannon, 2001).

Table 12.3. Assessment Methodologies

Standardized written examinations (multiple-choice, short-answer, essay)
Oral examinations
Paper-and-pencil questionnaires
Faculty/preceptor ratings
Objective structured clinical examinations (OSCEs) of patients
Real-time or video performance observations
Computer simulations and self-assessments
Case presentations
Patient logs
Structured interviews
Educational portfolios
Medical record audits
Ethnographic observations

A blended strategy can be extended to student assessment to counter some of the weaknesses of individual approaches. Table 12.3 lists a variety of assessment strategies available to educators, which can be tailored to the specific desired educational outcomes. Using more than one method of evaluation is appropriate in many cases. For example, students can perform a self-assessment on the scoring of a mental status exam of an elderly confused patient via a Web-based module. This exercise allows for a degree of standardization, assures that all students have a similar patient exposure, and limits (or eliminates) the time a preceptor needs to be present. At a later time, the exercise can be reinforced when a preceptor assesses students' performance of a mental status exam on a real or standardized patient.

Cost: Comparing the monetary benefits of a blended-learning approach, to the costs of the traditional learning program is another important component of evaluation. As mentioned earlier, a potential benefit of blended learning is its ability to reduce costs by redirecting limited resources and improving efficiency for educators and administrators. Economic outcomes that could potentially be measured are the number of man-hours originally dedicated to preceptor-assisted activities that are now reassigned to e-learning components, the expansion of the amount of content provided without additional faculty effort, and the reduction in administrative costs for monitoring and tracking student performance and

competencies accomplished by switching to the automated functions of a LMS.

Conclusions

In this chapter, the authors have proposed that the use of a blended-learning strategy combining face-to-face methods with innovative e-learning technologies might assist geriatrics educators in implementing a competency-based medical school curriculum. A blended strategy shifts the emphasis from the traditional teacher-centered approach to one that is centered on the learner and can potentially enhance the quality of the educational experience and improve student satisfaction and cost-effectiveness.

A rational instructional approach begins with the identification of competencies, followed by the formulation of learning objectives, the development of assessment tools, and the ultimate construction of a blended-learning strategy. This strategy requires first the identification of appropriate instructional methods and then the incorporation of e-learning, with innovative and potentially cost-effective presentation and distribution methods. A learning management system as the e-learning platform allows the delivery of this strategy. A multilevel evaluation will include among other things, evaluation of satisfaction, knowledge, skills, and attitudes, and cost-effectiveness.

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