



Massage Therapy Education Online: Student Satisfaction and Achievement, Part I

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In recent years, providers of massage therapy education have, in growing numbers, started to use online technologies to support the learning processes of their students. Using a narrative review of the existing online learning literature, this paper aims to provide a solid pedagogical foundation for these early explorations. It identifies five key factors—instructional pedagogy, quality of instruction, interaction and communication, individual learner qualities, and the online interface—that contribute to student satisfaction and achievement in the online context. The relationships between those factors and the experience of the online learner are discussed with reference to maximization of student satisfaction and achievement.

KEYWORDS: Massage, distance education, educational models, vocational education, education

INTRODUCTION

In recent years, a tsunami of online teaching has swept through the educational sphere. Massage educators have been relatively slow to adopt online learning methods, but this situation is changing. A number of institutions are now offering massage therapy education either purely online or with a blended style of delivery (that is, with a blend of online and face-to-face components), and a much greater number are considering an exploration of this area. There is a need for a solid pedagogical^(1,2) foundation on which to base these early explorations. The present paper seeks to identify factors that underpin student satisfaction and achievement in the online learning context, and then to relate those findings to the field of massage therapy education.

Why has the field of massage therapy not embraced online education before now? Many massage educators cannot see the relevance of online delivery to massage education (the profession is “hands-on,” after all). They believe that online education cannot be as effective as classroom-based learning. That belief is undoubtedly true in the case of practical massage techniques, but missing from the argument is a consideration of the fact that massage education

typically involves considerable theoretical learning as well as “hands-on” learning. A recent US Department of Education meta-review provided strong evidence that online learners perform better on average than do classroom-based learners, and learners in blended programs perform better still⁽³⁾. It may be that the true reasons for the delayed adoption of online education are a lack of experience within the massage education sphere and a subsequent lack of the skills required to effectively design online learning environments and to facilitate learning within them. The need for training and development in this area is urgent.

Among the things that make engaging with online education both challenging and exciting is the rapid development of online applications. Every week, more options are available to educators involved in online education, and a course that aims to utilize the richness which some of these contemporary online applications offer may often be involved in the use of a technology in a way that has not been documented previously. An experimental educational delivery style is therefore called for when online facilitators trial the use of an online application with a group of students in a particular way and then assess how effective the educational experience has been. A further outcome of the present review is a methodology⁽⁴⁾ for that ongoing assessment process. Part 2 in this series will discuss the methodology.

DISCUSSION

Student satisfaction is often taken as a measure of the quality of an educational program. Satisfaction is also considered to be a significant factor contributing to the rate of course completion⁽⁵⁾. A comprehensive review of the educational research literature found that, in nearly all cases, students chose to leave their nominated programs of study because of dissatisfaction with elements of their tertiary education experience⁽⁶⁾.

Pillay, Irving, and Tones found that students are often less satisfied by online learning environments than by classroom environments⁽⁷⁾. Many sources have reported that the rate of attrition in online courses is greater than that in traditional face-to-face courses^(8,9). That finding should be of concern to the

many educational institutions that are beginning to implement e-learning within their programs.

Interestingly, the dissatisfaction and subsequent attrition are not universal. A study done with students in the State University of New York Learning Network found that completion rates for online courses were not significantly different from those for face-to-face classes, and that online students were at least as satisfied as were their face-to-face counterparts⁽¹⁰⁾. Course completion rates may (unsurprisingly) be related to student satisfaction.

In recent years, blended delivery has become much more popular as an educational strategy. Tang and Byrne found that students involved in blended delivery programs were more satisfied with them than were students taking either purely online or purely face-to-face programs⁽¹¹⁾. With respect to achievement, multiple studies comparing online, classroom-based, and blended learning approaches have found that students in blended learning environments achieved results that were similar to, or better than, those achieved by students in either face-to-face or online learning environments^(3,11,12,aa). Student learning seems to be fairly unaffected by the medium of instruction, but blended delivery seems to have a slight edge over purely face-to-face or purely online learning environments.

Factors Involved in Student Satisfaction and Achievement

Whether consumers are satisfied or dissatisfied with a service is related to a comparison between their expectations about what they feel the service provider should offer and their perceptions about what the service provider actually offers⁽¹³⁾. In the case of education, if students perceive that the educational experiences provided meet their expectations, then they will be satisfied. If the benefits of the service as perceived by the students do not meet expectations, then they will be dissatisfied. In aiming to improve satisfaction for massage therapy students, it would seem important to consider the expectations of those students.

There is some evidence to suggest that students typically have a very low level of understanding of what study in a particular area entails⁽¹⁴⁾. This ignorance of subject material and course requirements is likely to lead to a gap between the student's expectations and experience, and is a likely cause of dissatisfaction.

Given that an educational experience is unlikely to exactly match the expectations of a new student

and that this mismatch is likely to lead to dissatisfaction in some areas, the suggestion has been made that educational institutions should take an active approach to managing and molding student expectations⁽¹⁵⁾. There is evidence to suggest that an ongoing two-way dialogue between the provider and the consumer of the educational experience can act to shape student expectations to become more realistic⁽¹⁶⁾. It is important for educational institutions to engage in this type of process, because providing students with the educational experience that they expect will not necessarily result in the best educational outcomes.

In addition to management of student expectations, five key factors relevant to the goal of maintaining student satisfaction and achievement at a high level surface in the body of literature concerned with online learning:

- Instructional pedagogy
- Quality of instruction
- Interaction and communication
- Individual learner qualities
- The online interface

Instructional Pedagogy

The dominant philosophy associated with online education is social constructivism⁽¹⁷⁾; however, it is not clear if this philosophy is the optimal pedagogical model for online or blended delivery. In a study of MBA programs, Benbunan-Fich and Arbaugh found that, if the educational process involved either group collaboration or knowledge construction, then learning outcomes were improved⁽¹⁸⁾. When constructivism and knowledge transmission (objectivism) were considered independently of other factors, students who were involved in constructivist learning perceived that their learning was lesser as compared with that of students who were taught using an objectivist method. In contrast to those perceptions, the actual learning of the students taught with constructivist approaches was greater⁽¹⁸⁾. Consistent with their perceptions⁽¹⁸⁾, the learning by the students was greatest when collaborative approaches were combined with individual learning approaches. However, the same study found that the gains made with constructivist and collaborative learning were not additive. Achievement was not significantly different between courses using constructivist approaches, collaborative approaches, or a combination of the two. Because perceived learning was maximized when knowledge transmission and group-oriented approaches were combined⁽¹⁹⁾, and because that combination of pedagogical themes was one of the combinations that optimized student achievement, these research findings suggest that a combination of knowledge transmission and collaborative learning is the logical pedagogical model to use in the design of online courses (Fig. 1).

^a Bryant FK. Determining the attributes that contribute to satisfaction among marketing students at the university level: an analysis of the traditional/lecture method versus the Internet mode of instruction. PhD thesis; New Mexico State University, Las Cruces, NM; 2003.

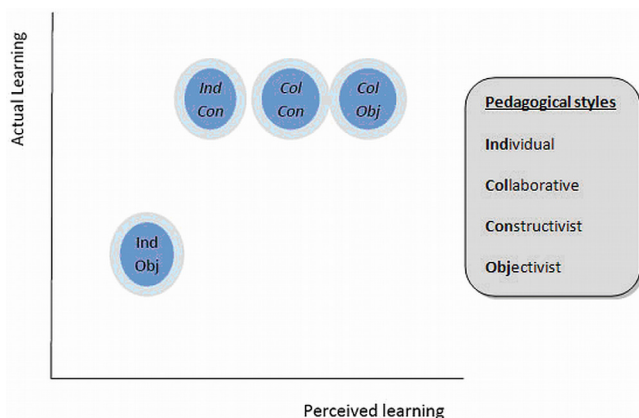


FIGURE 1. The effect of pedagogical styles on perceived and actual learning^(2,3).

Although the effect of a combined model may be true when considering courses with a single pedagogical approach, it has been suggested that learning is optimized when objectivist and constructivist approaches are used together. Objectivist approaches may be better suited to memorization of discrete chunks of knowledge; constructivist approaches may be better suited to higher-level learning such as clinical reasoning and critical thinking^(bb). This understanding suggests that, although it might be wise in general to use objectivist, collaborative approaches, some subjects or topics may be better suited to constructivist approaches.

Quality of Instruction

Areas that relate to instructional quality include communication of course requirements, structures, and processes, and provision of feedback on student progress.

Tertiary students expect that assessment and grading practices are transparent and that the information they receive is accurate and clear⁽¹⁶⁾. In particular, students expect quality information relating to learning goals, courses, assessment procedures, and complaint procedures, and transparency of assessment and grading practices^(15,16,20). It is worthwhile noting that all of these expectations are aligned with best-practice principles of higher education⁽²¹⁾.

Not surprisingly, these expectations are directly reflected in the factors that seem to contribute to satisfaction with instructional quality. Clarity regarding coursework requirements and how to proceed through the course have been found to be significant factors^(10,a), as has prompt, high-quality feedback from the instructor⁽¹⁰⁾.

The provision of detailed feedback as close as possible to the performance of the assessed behavior

^b Hegarty B. The impact of technology on the quality of teaching and learning in tertiary institutions. Unpublished literature review; University of Wollongong, NSW, Australia; 2004.

contributes to good outcomes for students⁽²¹⁾. The evidence provides strong support for the use of formative online tests that provide feedback on performance immediately following the test⁽²²⁾—one of the real strengths of online education. However, this type of feedback will generally not be all that is needed. This type of testing is generally able to provide feedback only on the memorization of individual units of knowledge rather than on the complex integration of concepts involved in higher-level learning. As a result, regular and timely feedback from the learning facilitator will also be necessary to support the integration of theory and practice.

The quality of staff induction processes and continuing professional development is another factor that is likely to contribute significantly to the quality of instruction—and therefore to student satisfaction in the online learning context. In many cases, the academic staff involved in the creation of online educational resources and the facilitation of student learning have had little experience of online education themselves and little training in online design methodology⁽¹²⁾. This situation is particularly true in the current context of massage education, where online learning is in the early stages of adoption. Staff induction processes that provide staff both with an experience of studying online and with the training to design online instruction are necessary^(23,24). An effective staff induction process should facilitate the acquisition both of the skills needed to successfully use the technologies utilized in the online learning environment, and of knowledge of pedagogical e-learning strategies⁽²⁴⁾. Helping staff to build a learning network that includes other staff involved in e-learning and e-learning “experts” is also useful because that network can support the just-in-time learning that is important for the ongoing informal skill development needed in this type of teaching⁽²⁴⁾.

As institutional adoption continues, the process of design and facilitation typically becomes coordinated through teams. These teams can include “the instructor as content expert, an instructional designer who assists with course design, and a media specialist who assists with the technical creation of course materials”⁽¹²⁾. Staff induction in this case is still necessary, but because of the specialization of roles, it is not as crucial or extensive as it needs to be in the early stages of adoption. This move to development and teaching teams is not likely to occur with small-scale providers because of the number of staff members involved.

Interaction and Communication

Many authors have described the importance of social contact and social processes in online learning^(7,10,21). “Social interaction within the [online learning environment] supports and motivates students to complete their work and seek out new learning experiences”⁽⁷⁾. Socialization encourages

student engagement⁽²⁰⁾. Communication in the online learning environment may occur between students and academic staff and also between the students themselves.

A comprehensive discussion on the differences between face-to-face and online communication and socialization is beyond the scope of this paper, but it is worth noting that face-to-face communication is generally richer than online communication is. Depending on the communication media used, online communication may not include some of the elements that exist in face-to-face communication—for example, nonverbal communication, or the ability to gain feedback, or both. These differences can cause students to feel that academic staff are not engaged with them and their online learning and to feel isolated from their classmates⁽²⁵⁾. Many authors have found that a high level of interaction with classmates and with the instructor contributes to student satisfaction and achievement^(7,10,18,a,b) and that dissatisfaction with the level of interaction can result in poor outcomes⁽⁷⁾. Interaction is thus an important consideration to address in any educational program that includes online components. Interaction may be even more important in a program of massage therapy education because of the people-oriented nature of massage therapy students.

Academic staff need to strive for presence in the online environment, and the online learning environment should include communication technologies that support student interaction and socialization. In the author's experience, even when online socialization occurs within the student group, the face-to-face sessions remain the most significant contributor to social relationships within the class, presumably because of the richness and intimacy of face-to-face communication. It is extremely important for educational programs to get the balance of online and face-to-face elements right.

Although presence and communication are undoubtedly important, the nature of the communication is also important. Students expect honest, respectful two-way communication between themselves and the education provider—communication that includes consultation about the learning experience and that demonstrates concern for their progress^(15,16). These expectations are again aligned with best-practice principles of learner-centered teaching and pastoral care.

Individual Learner Qualities

Certain qualities of individual learners have been found to be related to student satisfaction and achievement in an online context. Some of the most significant learner qualities are metacognitive skills and computer self-efficacy. The learning preferences of students are also widely considered to be an important factor.

According to Clark and Mayer, online students need to have metacognitive skills⁽²⁶⁾. These skills are

the abilities to set learning goals, to determine how to reach those goals, and to make adjustments where necessary. Students with poor metacognitive skills need more direction and motivation; students with good metacognitive skills tend to be more self-sufficient learners. This skill set has been described elsewhere as the qualities of a “self-directed learner”⁽²⁷⁾.

One reason that metacognitive skills are so important in an online learning environment is likely related to the number of possible distractions for a person studying from home. The development of metacognitive skills helps students to motivate and focus themselves on their studies in the face of these distractions.

Some authors have found that the presence of computer literacy before taking an online course is uncorrelated with satisfaction and learning⁽¹⁰⁾. That finding presumably depends on a combination of the level of technical ability required to negotiate the online learning environment, the computer support available to students, and the computer self-efficacy of individual students.

Pillay, Irving, and Tomes found that students with a low level of computer self-efficacy were more inclined to feel anxiety when required to use computer applications. This anxiety led users to interpret events more negatively than their non-anxious counterparts, thereby contributing to dissatisfaction⁽⁷⁾. Computer self-efficacy may be enhanced by the development of computer skills and metacognitive skills^(7,28), suggesting that educators involved in online study should consider the incorporation of computer literacy training and metacognitive skills development within or associated with their programs. Pillay and colleagues found that computer literacy and computer self-efficacy were positively correlated with educational outcomes for students⁽⁷⁾. Although computer skill is not necessary before enrolment for participants in online courses, it would seem that program elements that help students to develop computer self-efficacy and computer literacy are advisable.

The learning styles of students may also be a factor in satisfaction and achievement in an online environment. According to Wheeler, online courses seldom cater well to students who have a kinesthetic learning preference⁽²⁹⁾. This factor is well worth considering for those involved in massage therapy education, given that a large proportion of massage therapy students are typically kinesthetic learners (see Fig. 2).

There is some support in the literature for the viewpoint that online learning does not suit kinesthetic learners, but there are inconsistencies. Eom and Wen found that students with kinesthetic and aural learning preferences are less satisfied by online learning than are reader–writer and visual learners⁽³⁰⁾; Drago and Wagner found that, for similar measures, kinesthetic learners did not differ significantly from the rest of the population⁽³¹⁾. Meyer asserts that visual learners are more successful online than are aural or kinesthetic

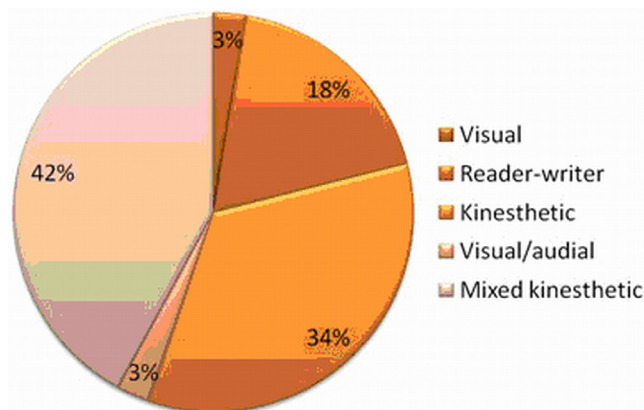


FIGURE 2. VARK (visual, audial, reader-writer, kinesthetic) learning preferences of students within the Otago Polytechnic massage therapy programs.

learners⁽³²⁾; however, Neuhauser found no relationship between learning preference and learning success⁽³³⁾. It seems likely that the differences may be a result of course design (Fig. 2).

Some online activities are likely to appeal to kinesthetic learners more than to other types of learners⁽³⁴⁾. Practical application is said to be key in educational design for the kinesthetic learner^(34,35). Two approaches that may be of benefit to kinesthetic students are case-based learning and learning that alternates sections of theory with exercises that require the students to apply that theory in practice (“chunking”). Interactive graphical environments such as drag-and-drop, virtual reality, simulation, and gaming interfaces are also likely to appeal to kinesthetic learners⁽³⁶⁾, although the development costs involved in these types of learning environments are significantly higher than those for more traditional text-based instruction⁽³⁷⁾. Although the online environment is currently predominantly text-based, multimedia is quickly replacing text as the dominant communication medium. This trend is likely to benefit kinesthetic learners.

The Online Interface

The “online interface” is defined here as the integrated group of technologies used to deliver the course content and to facilitate online communication. The term is student-centric in that it considers the interface between the student and the online learning experience. This interface can be designed and managed by the educational provider or organized directly by the student. The nature of the online interface appears to be a significant factor in student satisfaction, learning, and achievement⁽³⁸⁾.

Traditionally, the online interface has been designed and managed by the education provider, usually within a learning management system such as Blackboard or Moodle. Web 2.0 applications now allow students to aggregate streams of web-based content from their

educational providers with other information sources that they find relevant to their learning. In doing so, the students are able to create their own personal learning environment (PLE)⁽³⁹⁾. Many online educators believe that encouraging students to use a PLE is preferable to the more traditional use of a learning management system. They argue that, because a PLE mirrors the way that people use the web in today’s world, using a PLE in a formal course of study is more likely to support life-long learning^(40,41). This observation may be true, but it is also true that student use of a PLE removes a degree of the educator’s control over the learner’s online experience, making some of the design considerations discussed later in this subsection difficult to attain. In the author’s experience, use of a PLE adds complexity to the task of providing computer support. It can also cause fragmentation in the learner’s experience, particularly for learners who are not confident computer users. These factors may have a negative impact on student satisfaction.

The design of the online learning interface should begin with a consideration of the student’s online experience. Factors that appear to be particularly important to consider in the design of the interface include

- alignment with cognitive learning principles,
- minimization of dysfunctional learning experiences,
- provision of computer support, and
- facilitation of communication.

Cognitive load theory provides a useful, well-researched model for the design of online learning experiences^(26,42). The degree to which design is tied into cognitive learning processes is predictive of student achievement^(7,26). A simplified online interface that is easy to navigate contributes to student satisfaction^(10,43). According to the principles of cognitive load theory, simplified design should reduce cognitive load and result in improved learning⁽⁴²⁾.

Clark and Meyer developed a set of principles of multimedia e-learning design (outlined in Table 1) that are based on cognitive learning principles and extensive empirical research⁽²⁶⁾. The use of rich multimedia environments has much potential to engage students and to improve learning⁽²⁶⁾, but there are some problems with the provision of an optimal multimedia environment for learning. These problems relate primarily to financial resources and accessibility.

Unfortunately, relative to the creation of text-based resources, the creation of multimedia resources is expensive⁽³⁷⁾, and the financial resources available to educational institutions are often limited. Financial considerations may be less of an issue in the future. There is a move toward the use and reuse of open educational resources (OERs) within the education industry⁽⁴⁴⁾, and as multimedia learning resources become more available, the development costs of producing a media-rich educational program will decline. At present in the massage therapy field, few

TABLE 1. Clark and Mayer's Principles of e-Learning Design⁽²⁶⁾

The multimedia design principle	Information is easier to understand when presented with graphics. However decorative graphics that do not have instructional value tend to detract from learning.
The contiguity principle	Printed words should be placed next to relevant graphics. The effect of this is that connections between words and graphics are more clear, and the user has less need to search the page for meaning. As a result they are more able to attend to the content of the learning. Common violations of the contiguity principle: <ul style="list-style-type: none"> • Scrolling screens where visuals and related text end up becoming separated. • Feedback is displayed on a separate screen from the exercise or practice question. • Links leading to an onscreen reference cause a pop-up window which covers the related information on the initial screen. • Directions to complete exercises are placed in a separate screen from the screen in which the directions are to be followed.
The modality principle	When possible present words as speech rather than on-screen text. According to cognitive learning theory we have a visual and audial channel for receiving information. If words are delivered as audio this clarifies the task of the visual channel to interpret the picture. In some cases it may be optimal to present text on the screen as a reference.
The redundancy principle	Presenting words in both text and audio can impair learning. However redundant words may be useful when <ul style="list-style-type: none"> • there is no graphical representation. • the pace of the presentation is slow. • it's difficult for learners to comprehend spoken word (for example, a high proportion of non-native English speakers, learning difficulties, verbal material is long and complex or contains unfamiliar key words).
The coherence principle	Adding entertaining material (for example, stories, music or background sounds, pictures) can reduce learning when the material is not strongly related to learning outcomes. The learner will often focus on and recall the entertaining material at the expense of other material.
The personalization principle	Use conversational rather than formal language whenever possible. This is closer to natural human communication and is therefore easier to absorb. Virtual coaches (animated tutors) improve learning outcomes. There seems to be no difference between realistic and cartoon images. Human voice seems to be more effective than artificial voice (although there is limited evidence to support this).

educational institutions are involved in the creation of OERs, although development in this area has begun. Quality online learning resources are also available in the areas of anatomy, physiology, and pathology.

Another problem with the use of online multimedia is accessibility. Multimedia resources such as video and audio contain much more data than do text-based resources. This richness can lead to frustration on the part of a computer user with a slower Internet connection. Ideally, online learning resources should provide the user with the option of either text with images or multimedia.

Dysfunctional learning activities have been found to contribute significantly to dissatisfaction and poor educational outcomes for students^(7,26). Online learning activities may be dysfunctional because of poor design, insufficient testing, or technology failures.

Instructional design and testing are more important in an asynchronous learning environment (because of the lack of real-time feedback) than in a classroom. In a classroom environment, a teacher is often able to dynamically mould the classroom experience based on personal perceptions of how the learning activities are working—or not working—with the current group of students. In an asynchronous learning environment, the student engages with the activity without the instructor present. Developing communication pathways that alert the instructor to any such problems as near as possible to the time of the student's initial experience is therefore important.

Technology failures are a common cause of dysfunctional learning experiences⁽⁷⁾. In a meeting of teachers involved in web conferencing, a list of strategies was developed for minimizing the

impact of technology failure on the student experience (“technology risk”). This list included having both a plan A and a plan B, having a back-up communication channel, and ensuring that the learning facilitator is able to liaise with the server administrators in the case of server failure⁽⁴⁵⁾. If a real-time educational experience such as web conferencing is planned, the presence of two or more facilitators may be advisable so that one person is free to concentrate on resolution of any technology problems while another facilitator concentrates on facilitation of the educational experience⁽⁴⁵⁾.

The online interface can be considered to include the student’s own computer. Students can experience technical computer difficulties that can act as a barrier to their learning⁽¹⁰⁾. This risk may be reduced by the provision of computer support, and it has been found that the degree of satisfaction with the level of computer support is predictive of satisfaction with online learning as a whole⁽¹⁰⁾. One of the key functions of the online interface is facilitation of online communication not only between the instructors and the students, but also between the students themselves.

Effective communication is one of the most important factors in student satisfaction and achievement in an online context. As discussed earlier, effective communication channels can also act to buffer the risk of technology failure or inadequate testing of asynchronous educational experiences. The choice and utilization of communication technologies are therefore central to the optimization of online education. Many platforms might be used to support communication in the online learning environment; some of the more commonly used services are e-mail, e-mail groups, voice-over-Internet protocol (VOIP) services (MSN messenger, Skype), social networking platforms (Facebook, Bebo), web-conferencing services (Elluminate, Dimdim), blogs, and discussion boards. Design of the online learning environment involves choosing both the mix of the communication channels to be used in the program and the strategies and processes to be used to facilitate communication. In determining the communication mix, it is important to consider the risk of information overload. Some online technologies, such as RSS (“really simple syndication”) feed readers and Twitter, expose the user to a significantly greater volume of information. High volume can even be true of e-mail in some cases. The experience of a greater flow of information can be overwhelming for those not used to it and can lead to information overload.

Information overload may also occur as a result of poor design. Massage therapy students must take in a high volume of information, particularly in their study of the anatomy and physiology of the human body. Rather than direct students to absorb all this information, academic staff in the online environment should scaffold the students’ learning in much the same way that they would in the classroom: by considering what the students need to learn and the best way for them

to learn it, then by structuring the learning in terms of topics, tutorials, and integrative activities.

Not surprisingly, the nature of the online learning interface is a significant contributor to the satisfaction and achievement of learners. Where possible, the design of this interface should be aligned with the Clark and Mayer principles of multimedia e-learning design⁽²⁶⁾. Efforts should be made to minimize dysfunctional learning experiences through instructional design, testing of asynchronous learning experiences, and management of technology risk. Provision of adequate technical support for the computer-related problems of individual students is essential. Finally, the design of the online learning environment should include careful consideration of the communication technologies that will support online socialization and facilitate communication between academic staff and students and between the students themselves.

CONCLUSIONS AND RECOMMENDATIONS FOR TEACHING PRACTICE

While many readers will no doubt disagree with this conclusion, the evidence suggests that the optimal model for massage education (in terms of student satisfaction and achievement) is one in which online learning components are blended with face-to-face teaching. This is an interesting place to start, but many factors remain to be considered if the intent is to provide a truly learner-centered, effective learning environment. The discussion from this point attempts to provide some guidelines for those involved in the design, creation, teaching, and management of massage therapy programs.

The design and management of the online learning interface is a very significant contributor to student satisfaction and achievement. The design of the interface involves both overall design (the technologies used, the overall style) and the design of individual learning resources. There are many choices for the educational designer to make.

Is the educational experience of the students to be managed by the institution through a learning management system, or will the responsibility for this task be left with the students themselves?

In the author’s experience, a reasonable number of students in a typical massage therapy cohort are likely not to have developed the relatively high-end online skills required to build and effectively manage a PLE for their learning. An educator who pursues this strategy is therefore likely to spend a disproportionate amount of time supporting those students in their attempts to engage with coursework and to overcome computer-related problems. For such a class, a learning management system provides useful simplification for students and supporting staff alike. The benefits of this simplification should, however, be considered in relation to the benefits of helping these same students

develop the contemporary online strategies and skills associated with the creation and use of PLEs.

Online socialization is a fundamental element of the learning process. It encourages student engagement, motivates performance, and strongly contributes to both satisfaction and achievement. The choice of technology services to support communication between students and academic staff and the choice of strategies to facilitate that communication are important elements of any online educational design. The communication mix should consider not only the needs of the students, but also the needs of the instructors. A high level of interaction and instructor presence is good for educational outcomes, but the need for interaction must be balanced with the time that the instructors have available. In the synchronous classroom environment, the instructor's communications are almost entirely accessible to the whole class. In an asynchronous online environment, it is quite possible for communications (for example, e-mail, VOIP) to be accessible to only a single student. The online learning design should therefore consider how online communication technologies can best leverage the instructor's time. Technologies such as discussion boards or web conferencing platforms can be useful in this aim by making general communications visible to the entire class.

In the design of online learning resources, designers should strive for simplicity, ease of navigation, and alignment with the Clark and Mayer principles of multimedia e-learning design⁽²⁶⁾. At the same time, they should remain mindful of the learner's experience in navigating the environment being created. Designers should also consider the nature of the task and the nature of the learner. The overall style of instructional pedagogy should be chosen to suit the task. In general, an objectivist, collaborative approach seems to be optimal for online instruction. However, constructivist approaches may be more appropriate in some circumstances (that is, for subjects or topics that involve the development of critical thinking such as clinical reasoning and ethical practice). Teaching staff should bear these differences in mind when designing online learning activities and should strive to match the demands of the learning task with the most appropriate pedagogical style.

Most massage therapy students have a preference for kinesthetic learning. Compared with the text-based media that dominate the online environment, multimedia activities such as those involving drag-and-drop, simulation, gaming, or similar types of interfaces are likely to be more successful with massage therapy students. Unfortunately, the relatively high cost of developing multimedia resources can act as a barrier to development. The implication here is that, in the short term, online educational resources for massage therapy will need to be largely text-based—not ideal for the kinesthetic learner.

This problem can be alleviated to some degree by educational design. Theoretical material can be

interspersed with exercises that require students to apply their learning in a realistic context (case-based exercises, for example). Students may be directed from their online environment to engage in real-world activities such as interviewing massage therapists already in practice or carrying out directed practice with their classmates.

Ultimately, though, to maximize the satisfaction of learners in online massage therapy programs, the cost-related development barriers must be overcome. Collaboration between educational institutions and international collaboration involving the development and sharing of open-education resources seems to provide the most potential for reducing development costs. Collaboration is what will make possible the development of rich clinical simulations and interactive media that will ultimately be more appealing to kinesthetic massage therapy students.

Both metacognition and computer self-efficacy have been shown to be important qualities of the online learner. It has been noted elsewhere that the development of metacognitive skills is often not considered within massage therapy education programs, and that development of such skills is likely to underpin greater student success in both online and offline study [Williams A. Building emotional intelligence—a key to student success. Presentation at the (online) World Massage Conference; <http://worldmassageconference.com/>; November 12 – 17, 2009]. Within their online programs, providers of massage education would be advised to incorporate elements aimed at developing their students' study skills, reflective practice, and computer literacy.

Once educational resources are designed, the experience of the students within the online environment must be effectively managed. Optimization of student satisfaction and achievement requires the management of technology risk, student expectations, and student–staff communication.

Risk is always involved when computers are used for any task. In relation to online education, there is a risk that the educational activities or resources with which students are intended to engage will become dysfunctional or temporarily inaccessible. Most students find technology failures extremely frustrating and stressful. It is therefore very important to use strategies that aim to minimize both the risk and the impact of technology failures.

The online environment is fairly dynamic and educational resources that were previously fully functional can become dysfunctional either because links to external resources become invalid or software upgrades cause unforeseen effects. Testing of online learning resources both before their initial use and on an ongoing basis is vital. Ideally, testing should occur before each use. A discussion with the student group concerning the possibility that resources may become dysfunctional and encouragement to report dysfunctions when they strike can help the students to react more positively to

the experience of dysfunction when it occurs, especially if the dysfunction is rapidly corrected.

Technology dysfunction can occur when web servers fail, when a teacher's or student's connection with the Internet is cut off, and when students or staff have technical difficulties with the particular computer they are using. These and many other technology-related problems are possible. It is useful to discuss these possibilities with online teaching staff and to develop strategies for dealing with such situations when they occur. A help desk or a real-time computer-related support service can be of huge value for both staff and students in cases of technology failure.

It has been demonstrated that students typically have relatively unrealistic expectations about the course of study that they are intending to enter. In the experience of the author, entry-level massage students tend to have a relatively superficial understanding of the field of massage therapy. They expect their program of study to be primarily focused on applied massage techniques. They are often surprised by the amount of time they spend on the theory of massage, on anatomy and physiology, on communication, and on ethics and other aspects of professional practice. Many entry-level massage students will also not be expecting a program of study that is partially online and that involves a reasonable degree of computer use. This gap between the expectations and the realities of study is likely to lead to dissatisfaction and possible attrition unless the education provider takes an interest in student expectations. Massage education providers should consider working to actively seek feedback from and engage in dialogue with the students about sources of satisfaction and dissatisfaction. They should also rationalize the reasons for the use of online learning and strive to make explicit the links between theory and practice.

The expectations of students are not only about the subject material in their course of study. The expectations also extend to the nature of their experience as a learner. It has been demonstrated that students expect their interactions with the instructors to be honest and respectful and to demonstrate concern for their progress. They expect consultation about their learning experience and consideration of their perspective. These expectations are not unreasonable. They mesh with contemporary understandings of learner-centered teaching, and teaching staff should be encouraged to meet them.

To maintain an appropriate quality of instruction, effective induction processes for online staff and the attention of management are both advised. Staff induction processes should aim to develop competence with relevant technologies and an understanding of online teaching strategies and online design appropriate to each person's role within the teaching team. The provision of clear, comprehensive instructions and prompt, high-quality feedback should be established in the minds of the online teaching staff as equal

goals to strive for and should be regularly reinforced by management.

Taken as a whole, this list of recommendations could seem somewhat overwhelming, particularly to those entering the field for the first time who are simultaneously faced with an enormous range of communication technologies. It is probably best to treat the points expressed in this review as guidelines for practice towards which all can move over time.

The second article in this series will outline an assessment instrument that can be used to inform the development and management of the online components of massage therapy education programs.

CONFLICT OF INTEREST NOTIFICATION

The author declares that there are no conflicts of interest.

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