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Online Learning of Safe Patient Transfers in Occupational Therapy Education

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Online Learning of Safe Patient Transfers in Occupational Therapy Education

Abstract

Online higher education is steadily increasing. For programs in allied health to be offered effectively in an e-learning format, clinical psychomotor skills need to be addressed. The aim of this research was to design, implement, and evaluate an online safe patient transfers module for occupational therapy assistant (OTA) students. The efficacy of teaching safe patient transfers in an e-learning environment was appraised using both quantitative and qualitative analysis. The applied research project was completed at a Tennessee community college. A convenience sample of eighteen students participated in the pilot study. Twenty-five students participated in the subsequent study. The instructional design of the course was based on Mager's Criterion Referenced Instruction model. Streaming video was used as the delivery method for course material. A pretest/posttest evaluated the students' cognitive knowledge of safe patient transfers. A behavioral transfers competency checklist was used to rate videotapes of students' performance of assisted stand pivot and dependent sliding board transfers. Research findings indicated students were able to learn this psychomotor clinical skill online with beginning proficiency. A paired *t*-test showed marked improvement of cognitive knowledge. A student learning survey revealed the majority of students preferred at least one hands-on classroom session where instructor feedback and interaction with classmates confirmed safe and effective clinical technique.

Keywords

Occupational therapy education, online learning, psychomotor skill, clinical skill, safe patient transfers

Cover Page Footnote

This applied dissertation was submitted to the School of Health Management in partial fulfillment of the requirements for the degree of Doctor of Health Education from A. T. Still University in 2010. Two proposals have been submitted based on the research. It is too early to receive acceptance letters on these presentations. 1) Online Learning of Clinical Psychomotor Skills, The 32nd Annual International Lilly Conference on College Teaching, "Evidence-Based Learning and Teaching", Miami University, Oxford, Ohio, November 15-18, 2012 2) Teaching Clinical skills online: Are we there yet?, Research Proposal, 93rd AOTA Annual Conference & Expo, San Diego, CA, April 25-28, 2013

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A well-established occupational therapy assistant (OTA) program has thrived in the Nashville area since 1976. When gas prices rose steeply in 2008, the OTA program at Nashville State Community College (NSCC) began looking for ways to support students so they could afford to continue their education. One of the solutions for the commuter campus was to redirect course content to an online learning management system. The campus converted course syllabi, topical outlines, power point slide presentations, lecture notes, assignments, and tests to an online format, thus reducing the number of days students needed to commute. Lab-based content was kept in the classroom and required students to come to campus. The assumption of the OTA faculty at NSCC was that labs needed to continue being offered in person, so students could receive feedback on affective and psychomotor performances. The main concern among the OTA faculty was whether psychomotor skills could be taught effectively in an online format without offering the traditional hands-on laboratory component. Of special concern are clinical skills, which involve affective and kinesthetic feedback and cognitive abilities. Verbal and nonverbal communication, or social presence, that occurs in classroom settings may enhance and speed retention of physical, affective, and cognitive skills (Diaz & Cartnal, 1999).

At the same time that these changes were taking place at the community college level, this author was completing doctoral work in health education in an online program. Inspired by the changing dynamics of education and with the

resources to create in-house videos, an applied research project was undertaken.

Literature Review

The author reviewed three important aspects of the literature related to online learning of safe patient transfers in occupational therapy (OT). This literature review resulted in the following findings. First, teaching and learning online in general, and specifically with allied health and community college students, has its challenges. Second, there is limited research on the use of video technology to teach psychomotor skills to ensure clinical competence for allied health students. Last, the clinical skill of safe patient handling and transfers is crucial for allied health students to learn in order to prevent future musculoskeletal injury to both therapist and client.

A review of online learning and technology articles reveals that this delivery system is becoming an increasingly important part of teaching in higher education. There are over six million students taking online courses in the United States, a growth rate ten times that of classroom enrollment (Allen & Seaman, 2011). The amount of higher education coursework delivered in the future through the online environment will increase as the trend of e-learning continues. To remain competitive, two and four year colleges and universities are shifting from traditional lecture and lab-based courses to more online and blended teaching. This change in higher education provides more flexible learning opportunities for students. However, while there are benefits to online learning, other issues warrant discussion before offering courses in an e-learning format.

Mancuso (2008) examined the challenges college students face in completing online courses. These challenges can be grouped into student concerns, faculty concerns, and technology-related problems. Student issues are the inability to have face-to-face interactions with instructors, the limited ability for classmates to bond, being unable to have questions answered immediately, and a lack of personal motivation. Faculties see various student learning styles as incompatible with web-based courses, and view students' lack of understanding of web-based courses and how they work as stumbling blocks. Issues with technology and the quality of web-based courses are also a concern with online classes.

Developing and providing college courses online is complex and different from traditional methods of higher education teaching. Teaching online depends on using appropriate technology and applying an underlying pedagogy to ensure high quality learning experiences. Educators who switch from classroom instruction to teaching via the Internet can find the transition challenging (Johnson, 2008). Best practices for teaching online incorporate many elements. Zsohar & Smith (2008) suggest that faculty who create and implement effective online courses remember these guidelines: Developing and managing online courses are time-intensive activities, students and faculty must have clear communication guidelines, learners need to engage in active learning and building community, online learners benefit from clear assignment guidelines and deadlines, and immediate and continuous feedback improves student learning in

Removing the distance barrier of having all on-campus courses opens health care educational programs to a new and previously inaccessible pool of students (Benson et al., 2005). Enabling students to complete courses around work and family responsibilities could address the need of training professionals for health care services (Williams, 2006). The number of professionals, such as nurses and therapists, graduating from allied health care programs is not currently keeping pace with the demand for health care services (Bureau of Labor Statistics, 2012). The online learning environment may provide the means of educating future health care workers, especially in rural areas or in understaffed professional disciplines. Colleges can use online courses as a strategy to attract students to specific skill areas currently under-enrolled, such as OT and OTA programs, or to fields with a high demand for new employees. Placing part of the curriculum online permits the student greater flexibility in learning.

According to the Association of Schools of Allied Health Professions (2002), computer use and online teaching is gradually being integrated into existing allied health curricula to varying degrees. Overall, student performance in online allied health education degree programs such as psychology, physical therapy (PT), and nursing has been found to be equal to or slightly better than traditional on-campus programs (Williams, 2006). An article concerning online allied health programs reported that community health nurses were just as clinically competent when trained online as their classroom counterparts (Wright & Thompson, 2002). Benson et al. (2005) completed a study looking at three

different online associate degrees: Funeral service education, restorative arts, and veterinary technology. The researchers acknowledged “students who completed the online courses were successful, on the first attempt, in passing the national board exam for their regulated profession when the online curricula was tightly aligned with state and national licensing standards” (Benson et al., 2005, p. 392).

The major challenges to converting entire allied health programs to online degrees lie in resolving three important issues. Two of the topics are similar to online higher education teaching in general. The first concern is that many health care instructors across the United States appear untrained and unenthusiastic about learning the computer skills and existing technology needed to place significant portions of allied health programs online (Fehn, 2005). The second concern is that allied health professors must be educated in the instructional methods and pedagogy needed to follow best practices for online teaching (Johnson, 2008). The third significant deterrent to placing entire allied health and nursing programs online is the psychomotor skills component common to their curriculums. Patients need allied health care professionals who are skilled and trained to deliver safe, quality care. To effectively move allied health care programs online, allied health educators need to learn how to teach psychomotor clinical skills online.

Teaching clinical skills is a primary component of all allied health education programs. Clinical skills are a “complex amalgam of interpersonal and communicative competencies, as

well as technical and procedural knowledge and skills” (Austin & Dean, 2006, p. 80). Clinical skills have traditionally been taught in classrooms with direct gestural and verbal feedback from allied health educators. The main concern is whether these psychomotor skills can be taught effectively in an online format without offering the laboratory component. Can allied health students be trained in areas of practice having affective, motor, and kinesthetic skill components without face-to-face contact with academic instructors? Will this training be sufficient for professional practice and safe, quality patient care?

There is limited documented evidence illustrating cases in which students learned a clinical psychomotor skill solely online. For online career and technical courses, a variety of technologies have been used, including text, audio, and video streaming (Benson et al., 2005). Typically, allied health professionals learn psychomotor skills through the combined approaches of online tutorials, practical experiences in fieldwork, or paid employment and hands-on practice in campus labs. Video technology has been used as a supplemental, but not primary, method for developing learning materials to enhance online clinical psychomotor skill development (MacKenzie, 2003).

Video technologies such as videotapes, CD ROM, and digital streaming have been used effectively to teach clinical skills such as health assessments and treatment techniques to allied health students and providers (Lashley, 2005; Smith, Jones, Cavanaugh, Venn, & Wilson, 2006). Lashley (2005) notes the nursing department at

Towson University offered a health assessment course online. The course included digital streams of instructional videos, enabling the faculty to teach psychomotor clinical skills. The faculty concluded that students learned to perform health assessments as easily as their class-based peers. The nursing students considered the video technology the most helpful part of learning health assessments from the web-based course (Lashley, 2005). Since psychomotor skills involve movement of the patient and student or professional, video can capture the dynamic of movement during training and assessment of a clinical skill.

Studies of similar skills in allied health areas of study show that video technology can effectively demonstrate psychomotor clinical skills. PT, social work, and audiology students were able to learn health assessments and treatment techniques from multimedia as efficiently as students in the classroom setting (Rosenthal-Gelman & Tosone, 2006; Sistrunk, 2002; Smith et al., 2006). Smith et al. (2006) reported that students learned psychomotor clinical skills from video technology in their research setting. The study compared PT students learning physical exam skills in a traditional lecture/lab format versus a CD ROM tutorial (Smith et al., 2006). One group of PT students was taught knee exam skills in a lecture/lab format and ankle exam skills in a CD ROM format. A second group was taught the reverse, or knee exam skills in a CD ROM format and ankle skills in a lecture/lab format. Based on written and practical exams, the PT student groups learned the knee exam equally well in both formats. The student

ROM format actually tested better than the group studying ankle exam skills in the lecture/lab format (Smith et al., 2006). In two additional allied health educational settings, students benefited from instructional video technology. Social work students created a reality-based training video. The video involved the use of role-plays, simulated clients, and video technology. The videos were then delivered via the web as a method for students to learn clinical skills (Rosenthal-Gelman & Tosone, 2006). Audiology students learned more in-depth clinical skills from interactive case studies on CD ROM and from computer aided instructional modules (Sistrunk, 2002).

MacKenzie (2003), a Canadian OT lecturer, developed a video demonstration library for OT students' use online. She reported that her students' viewing of video clips online were a valued part of learning safe transfer skills. The OT students performed well on their practical competency, and reported that the video vignettes provided instructional benefit to them, and had a positive effect on learning the clinical skill. It was noted that the online videos were a supplemental learning resource and not the primary method of teaching (MacKenzie, 2003). More research on using video technology to teach entry level hands-on clinical skills is necessary, but these studies are early indicators of success with using video technology as a delivery method for training students in psychomotor skills. The MacKenzie journal article (2003) specifically indicated that video technology delivered online facilitated the learning of safe patient transfers.

In conclusion, there is a body of evidence that suggests that online learning for a variety of subjects, including those usually mastered by OTs and other allied health students, is effective when done well. OT instructors have been slow, and sometimes resistive, to develop web-based instructional technology. Gourley (2002) suggests that online learning is most successful at the post professional level and states, "...educators need to keep entry level occupational therapy students in the classroom, where hands on instruction is critical" (p. 18). However, some OT educators have begun creating online and hybrid courses covering mainly cognitive and theoretical content (Hollis & Madill, 2006). Those courses already transitioned to the online delivery system consist more of theory, problem-based learning, and clinical reasoning content based on written scenarios rather than video content and learning of OT clinical psychomotor skills (Hollis & Madill, 2006). There is little literature that discusses how students can learn non-cognitive skills, such as psychomotor, using online techniques. Therefore, the purpose of this article is to describe the design, implementation, and evaluation of an online safe patient transfers module for OTA students. The author used a mixed method approach to appraise the efficacy of teaching this clinical skill via an online format and to understand student perceptions of participating in this online experience.

Method

This applied research project was part of a doctoral dissertation from A. T. Still University (ATSU), which offers a doctorate in Health Education online. Institutional review boards from

both ATSU and NSCC approved this research. For this study, the author selected safe patient transfers as an important clinical skill that could potentially be taught using video technology in an online learning environment. A safe patient transfer can be defined as safely moving a patient from one surface, such as a wheelchair, to another surface, such as a bed, mat, chair, toilet seat, bathtub bench, or car seat (Pierson & Fairchild, 2008). Safe patient transfers are a key psychomotor skill taught to allied health students and professionals who will come into direct contact with patients.

One of the highest risk tasks of patient handling is a patient transfer. Safe patient transfers affect the health of the allied health professional, as an improper transfer can cause a serious career-ending back injury (Fragala, Graham, Meittunen & Wilson, 2005). Nursing and allied health care workers suffer the second highest back injury rate in the United States (United States Department of Labor, 2002). Since the injury rate for allied health care professionals performing patient transfers is significant, it can be argued that a better training system for safe patient transfers is necessary.

Two components of instructional design used with the safe patient transfers module were the Criterion Referenced Instruction (CRI) framework developed by Robert Mager and the psychomotor domain of Bloom's taxonomy. CRI incorporates the concepts of learner initiative, performance-oriented instruction, and mastery learning (Notar, Herring, & Restauri, 2008). CRI consists of well-defined course objectives, practice exercises, and mastery exams. Mager's course designs are self-paced and utilize a variety of multimedia such as

workbooks, videotapes, and computer-based instruction. Bloom's taxonomy of the psychomotor domain is characterized by progressive levels of physical actions from observation to imitation, then practice and mastery of the skill (Pennsylvania State University, 2010).

The instructional media and activities that OTA students accessed to learn safe patient transfers were textbooks, streaming video, lab activities, and other online documents. The textbooks were *Physical Dysfunction Practice Skills for the Occupational Therapy Assistant* and *Principles and Techniques of Patient Care*. The chapters pertaining to the module were summarized in lecture notes and posted under module content online. Commercial video resources were considered and rejected for this project. Due to the criteria for the safe patient transfers skill competency, the author determined that videos needed to be produced specifically for the course. Fifteen short (four to twelve minute) videos were filmed and produced in-house with the assistance of the instructional technology department, volunteer staff, and faculty. The videos taught correct posture, lifting techniques, and safe patient transfers. A step-by-step process using the transfers competency checklist (Appendix A) guided the video making process.

Additionally, the online safe patient transfers module was designed to meet online learning environment principles. The operational course design allowed students to access information according to prior experience and learning needs. Students were able to choose

reading the lecture notes. All students viewed a minimum of four instructional videos (posture, lifting, step-by-step assisted stand pivot transfers, and step-by-step dependent sliding board transfers). The student was guided to remedial videos and/or enrichment videos as needed for further learning. Three lab activities corresponded to the video materials on posture, lifting techniques, and safe patient transfers. The syllabus, lecture notes, lab activities, video links, pretest and posttest, written assignment, and survey were all administered online.

Participants of the research study came from a convenience sample of first year, second semester OTA students attending a two-year college in Nashville, Tennessee. Eighteen students participated in the pilot study in 2008. Twenty-five students participated in the subsequent study in 2009. All first year OTA students volunteered for the years 2008 and 2009 for a total of 43 OTA students. There was no penalty for nonparticipation in the study. The students were assigned random numbers within each class to maintain anonymity. The three-week online safe patient transfers course was offered as a module in the Human Movement for Occupation course in the second semester of the OTA curriculum. Data collection occurred during the semester the online module was taught as pre and post outcome measures.

The student assessment instruments used in the learning module were the pretest/posttest, a behavioral competency checklist, and a written assignment. A pretest/posttest consisting of 25 multiple-choice questions was administered online to assess students' cognitive knowledge of safe

patient transfers. The multiple choice test questions drew upon the course lecture notes, lab activities, and video components of the course. The online test included pictures but not video clips. The test was validated through the 2008 pilot study and the OTA faculty review of course materials compared to test questions. In the second year of the research study, questions did not need to be modified, and a pretest and posttest were given. The transfers competency checklist served as a standardized grading form to rate each student's video performance of safe patient transfers (Appendix A). Students' demonstrations were rated numerically from 0-100 with a passing score of 75%. The checklist consisted of a 20-item score sheet with each item worth zero to five points, for a total number of 100 points. Ten of the items were for an assisted stand pivot transfer (50 points) and ten items were for a dependent sliding board transfer (50 points). The transfers competency checklist had been used for several years by the OT department to grade OTA students' performances on the safe patient transfers competency. The OTA students submitted a one to three page written assignment online outlining a treatment session for an allied health care worker who has suffered a back injury due to improper lifting and transfer techniques. Students' scores on the written assignment were derived from use of a grading rubric.

Data Analysis

The goal of the study was to design, implement, and evaluate an online clinical skill module for OTA students. In terms of evaluation, the study used both quantitative and qualitative analyses in determining the efficacy of teaching

safe patient transfers in an e-learning environment. Quantitative data analyses involved the collection of students' performances from the three student assessment instruments (pretest/posttest, video transfers competency checklist, and written assignment). All data were collected through the Desire 2 Learn course management system (used for all Tennessee's higher education online, hybrid, and classroom based courses), with the exception of videotaping the students' demonstrations onsite in the OTA lab room for study consistency.

In 2008, only the posttest, and not the pretest, was administered online. In 2009, students took the online 25 question multiple-choice pretest before the safe patient transfers course began. The pretest measured the student's prior cognitive knowledge of safe patient transfers. After completion of the online safe patient transfers course, the student completed the same 25 question multiple-choice test as a posttest to measure the cognitive knowledge gained from the course. A one tailed *t* test was used to analyze the pretest/posttest 2009 scores. To assess the psychomotor component of the clinical skill, students were videotaped performing the safe patient transfers competency. The students were assigned numbers randomly and each videotape clip was labeled with the randomized number as identification. The transfers competency checklist served as a standardized grading form to rate each student's video performance of safe patient transfers. Five raters independently rated each student's performance of safe patient transfers (the instructor, three experts, and the student). The five scores for each student's psychomotor performance of safe patient transfers

were entered into tables that examined interrater and adjacent interrater agreement. For the video transfers competency checklist, an interrater agreement combined with an adjacent interrater agreement for the three expert raters averaged to slightly above 80% for the assisted stand pivot transfers and slightly below 85% for the dependent sliding board transfers. This is considered an acceptable range.

An online descriptive survey (Appendix B) was used to assess the OTA students' attitudes regarding taking the online safe patient transfers training module. A 17 question descriptive survey was completed by each student online to look at the student's perception of online learning of a clinical skill. The students were asked questions regarding self-perception of their ability to learn the content of the safe patient transfers module through the online environment. The survey asked the students to self-rate his/her participation level in the module. Students also indicated in the survey whether they had prior training in safe patient transfers or prior online learning experience. Descriptive statistics were used for the survey questions students completed pertaining to the learning module. The descriptive survey was designed so that it yielded responses that could be coded for data analysis. Each question was scored in terms of frequency of answers. The questionnaire provided quantitative data on the students' experience level with transfers. The students' attitudes about online learning and his/her experience level with online courses were also included in the data set. A two-tailed *t*-test with satterthwaite degrees of freedom was

posttest scores, transfers competency scores, written assignment scores, and total course grade scores. The four sets of scores were examined for differences between those students who had prior transfers experience and those students who had no prior transfers experience. The four sets of scores were also evaluated for differences between those students who had prior online learning opportunities and those students who had no prior online learning opportunities. The information was used to assess the efficacy of the curricular intervention from the students' perspective.

As a follow-up, the author surveyed OTA fieldwork educators supervising these OTA students on their Level II fieldwork experiences. The survey question asked if in the supervisor's judgment the students were sufficiently prepared to perform safe patient transfers in the clinic. Upon graduation, the OTA student participants were also surveyed and asked if they felt sufficiently prepared in safe patient transfers prior to their fieldwork experiences.

Results

Discussion of results is divided into quantitative and qualitative analysis. In terms of quantitative analysis, students' posttest scores showed marked improvement. In the pilot study, only the posttest was administered in 2008. The class average for the 17 students who took the posttest (one student failed to take the online test) was a 74.35%. In the subsequent study conducted in 2009, 25 OTA students took the online pretest and posttest. All 25 OTA students demonstrated an increase in test scores from the pretest to the posttest (Figure 1). The increase in scores ranged

from four to forty points, with an average increase of 17.44 points. Students' scores showed a definite gain in cognitive knowledge of safe patient transfers based on comparison of pretest and posttest scores. A paired, one-tailed *t*-test was used to compare pretest and posttest scores for the 2009 OTA students. There was a significant improvement of test scores after taking the online safe patient transfers course (*p* value <0.0001).

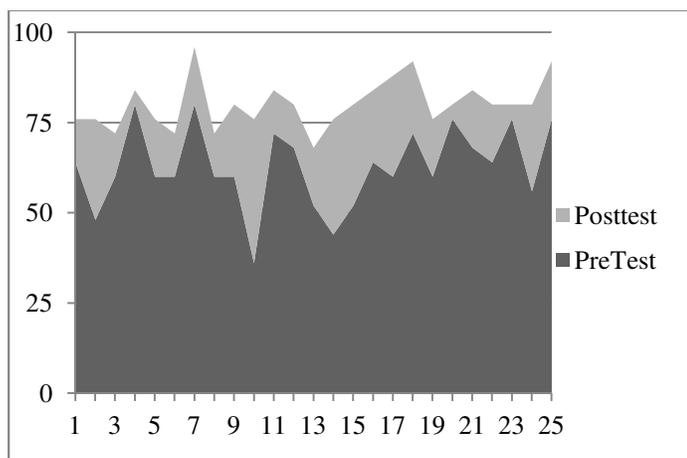


Figure 1. Online Safe Patient Transfers Module Pretest/Posttest Comparison of Scores 2009.

For the behavioral competency checklist, expert 1 rated 42 of 43 students passing with a score of 75% or better. Expert 2 rated 40 of 43 students as passing the competency. Expert 3 did not fail any students, but did give the only “C” grade to the student who failed with the other two expert rater’s scoring. Both the instructor and the student’s self-ratings on the 43 students failed only the student identified by both of the expert raters 1 and 2 as failing.

Sixteen of eighteen OTA students passed the safe patient transfers online course in 2008 with a grade of 75% or better. The student who failed to

take the online posttest had a course average of 52.4%. A second student had a course average of 72.2%. In the 2009 subsequent study, 25 of 25 students passed the safe patient transfers online course with a grade of 75% or better. For the combined study, 41 of the 43 participants passed the safe patient transfers online course. Table 1 indicates differences between students who had prior online learning experience and/or prior knowledge of patient transfers versus students who did not. There appears to be no significant difference between the test scores, competency grades, or course average for the no prior transfers versus prior transfers group. There are insufficient numbers to declare a statistically significant finding. For the no prior transfers online experience versus the prior transfers online experience, there also is no discernable difference in course ratings for any category of grades.

For the qualitative portion of this study, the descriptive survey answers and comments were analyzed. Initials were assigned to each participant. Data was reduced, answers to questions were coded and categorized, and themes were identified. Six themes emerged from the four open-ended questions requiring written comments from the OTA students. The six areas of concern regarding the learning of psychomotor skills online are delineated and exemplified in Table 2. Students were also surveyed to see if they would consider learning other psychomotor skills online and whether they would be interested in attending an entire OTA program online.

Table 1

Online Safe Patient Transfers Module Participants' Grade Analysis

Safe Patient Transfers	Variable	N	M	SD	p (two-tailed)
Posttest	No prior transfer	30	77.60	74.24	< .78
	Prior transfer	12	78.33	49.22	
	No prior online	24	79.17	75.97	< 0.20
	Prior online	18	76.00	49.78	
Competency	No prior transfer	31	91.35	17.35	< 0.95
	Prior transfer	12	91.50	49.58	
	No prior online	23	92.00	28.96	< 0.80
	Prior online	20	91.60	23.34	
Assignment	No prior transfer	31	91.38	67.22	< 0.25
	Prior transfer	12	94.17	40.98	
	No prior online	23	93.15	55.01	< 0.60
	Prior online	20	91.88	66.80	
Course grade	No prior transfer	31	85.21	58.96	< 0.26
	Prior transfer	12	87.20	12.76	
	No prior online	23	87.16	19.60	< 0.19
	Prior online	20	83.88	72.69	

Table 2

Descriptive Online Survey Themes and Direct Quotes

Areas of concern	Direct quotes of students' concerns
No issues	"Nothing interfered with my learning the safe patient transfers." (AT)
Video quality interfered with learning	"It was hard to see where my feet needed to be during the transfers. Seeing the video from multiple angles would have helped." (WS)
Lack of hands-on instruction limited learning	"I am a hands on person so I had a hard time watching videos online to get what I needed." (BF) "I am a hands on, visual learner, and I would have liked to have been shown in the classroom at least once for my own peace of mind. However, I was able to learn and was confident in taking my competency. Sometimes you just have to step outside your comfort zone." (CO)
Need questions answered face-to-face by instructor	"Not being able to get an immediate answer to the questions I had while trying to practice the transfers." (JW) "If I had time in the classroom with the instructor to ask questions." (SR)
Time management issues	"The amount of work due at the same time was challenging; if I had practiced more I think my transfers would have gone better." (LS)
Need immediate feedback on performance	"I am a visual-kinesthetic learner, and I need to be able to see things from multiple angles, then practice them and get feedback on my performance to feel as though I am able to do them properly." (CH)
Consider learning other psychomotor skills online	"I would be interested in learning other OTA skills online, as long as there was time to meet at least once as a group for questions and to review the information." (YP)
Consider taking the entire OTA program online	"I typically do well with on-line courses, but I do not feel that it would be a good idea for the entire OTA program to be online. Many of the activities learned should be as a group where hands on experience can take place. Having your classmates there for back up and support also helps." (LW) "I feel there is a lot of information lost by getting entire degrees online. There is no chance for 'in-the-moment' questions, there is too much room for interpretation, and there is the loss of interaction between students and teachers for getting tips, support, etc. Additionally, I feel that the classroom experience is very valuable to professional development." (DN)

In summary, a student who drove four hours a day to attend the program was perhaps the most persuasive.

I drive four hours a day to this program, and even though I am starting to get tired of the drive, I still love coming and learning what all I have. I am a hands on person and like to interact with others that I typically do not see and I think that this too is a big help for me to get me out of my comfort zone. I would rather drive and know that I am learning and understanding things that I can use in my career someday, than watch it online and hope that I am understanding. I also tend to ask a lot of questions in class and when I try to write them in an email, I either leave out something or I all together just do not know how to word what I want to ask. (RE)

Discussion

This applied research project has implications for education and practice areas. The study has demonstrated that by using video streaming online, a clinical skill, such as safe patient transfers, can be learned with beginning proficiency. This conclusion is in agreement with the article written by Smith et al. (2006) describing PT students' mastering of lower extremity assessment skills using a CD video. The majority of OTA students participating in this action research study clearly preferred having teaching videos as supplemental, not primary, learning materials. This correlates with MacKenzie's (2003) findings where using video technology online as supplemental, but not primary, learning material further enhanced

clinical psychomotor skill development. Even though OTA students commented positively on learning safe patient transfers techniques from the videos, their preference was to interact with the instructor, receive hands-on feedback from the instructor, and practice clinical psychomotor skills with classmates in the classroom setting. In a follow-up survey question to Fieldwork Level II OTA supervisors and student participants, all respondents noted that safe patient transfers were learned sufficiently to demonstrate beginning competency from the safe patient transfers online course.

Although this study was limited to 43 OTA students, it has implications for health care practice, research, and education. At present, health care professionals receive many continuing education units via online training to maintain competency. As an example, the Joint Commission on the Accreditation of Healthcare Organizations (JCAHO) requires review of infection control techniques annually (JCAHO, 2003). The question arises, if allied health staff received annual retraining of safe patient transfers online, would the rate of injury for transferring and handling patients decrease for working professionals? Further research suggestions include comparing the effectiveness of online training of a clinical skill to the teaching of a psychomotor skills in a hands-on laboratory classroom setting, whether a different psychomotor clinical skill can be learned online using video technology, and whether students can maintain over time a clinical skill that they learned online.

In the future, video technology may be utilized as a primary learning tool for certain psychomotor techniques, as it can capture the dynamic nature of clinical procedures. Increased use of technology such as telemedicine, webcam, audiovisual feedback, pdf reader programs, and video e-mailing will allow allied health programs to offer clinical skills training online. Hollis and Madill (2006) suggest that a blending of online learning and face-to-face instruction could address the learning needs in the professional preparation of

undergraduate and graduate OT students. As blended and online learning becomes the norm, it is predicted that learning psychomotor and affective skills online will become increasingly important in order to ensure patient, student, and health care worker safety. If this is true, then educators in professional allied health programs, such as OT and OTA programs, will need preparation to teach clinical skills through e-learning effectively.

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Appendix A

Safe Patient Transfers Competency

STUDENT _____

DATE _____

INSTRUCTOR _____

ASSISTED STAND PIVOT (CVA) TRANSFER

- ____ 1. Wear OT shirt, Fieldwork pants, and wear name tag. Have hair tied back, no dangling jewelry, and wear athletic shoes with good tread.
- ____ 2. Introduce self, explain transfer in simple everyday words, remove footrests, or swing away as needed. Have pt help as able. Place wheelchair at 45 degree angle.
- ____ 3. Teach pt to lock brakes, secure safety belt around pt at pelvic/hip level. Remove armrest if weak side toward mat, leave armrest if strong side toward mat, have high part of armrest toward front.
- ____ 4. Larger part of front casters need to be forward, ask pt to scoot unaffected side hip forward ½ of seat. Assist by pushing back of affected side hip forward ½ of seat, maintain contact guard assist throughout transfer.
- ____ 5. Stabilize pt's affected knee and foot with both of your knees and one foot, instruct pt to use unaffected arm to push up from armrest to stand. Do not allow pt to put hand on your neck or shoulder, pt can hold on to your waist.
- ____ 6. Use proper therapist body mechanics, back straight, knees bent, one foot in the direction of the move, foot farthest from mat inside front caster. ____ 7. Therapist's hands on both sides of safety belt, get pt's verbal or nonverbal ok for the transfer, count to 1, 2, 3 using forward momentum, assist pt to stand on 3.
- ____ 8. Pt to achieve standing balance with therapist support, weak knee braced, then assist pt with several small pivot steps towards mat on unaffected leg, pt to feel mat on back of legs, pt to reach for mat then sit, therapist to keep back straight and knees bent to lower pt to mat for short sitting. Replace wheelchair parts.
- ____ 9. Therapist displays planned, efficient use of his/her time and energy. Displays problem solving skills if transfer did not go smoothly and safely.
- ____ 10. Therapist displays confidence, calmness, and firmness in pt interactions.

Safe Patient Transfers Competency

STUDENT _____

DATE _____

INSTRUCTOR _____

DEPENDENT SLIDING BOARD (QUADRIPLEGIA) TRANSFER

- ____ 1. Wear OT shirt, Fieldwork pants, and wear name tag. Have hair tied back, no dangling jewelry, and wear athletic shoes with good tread.
- ____ 2. Introduce self, explain transfer in simple everyday words, remove footrests, or swing away as needed. Place wheelchair at 45 degree angle.
- ____ 3. Lock brakes, lean pt's torso forward and support with your shoulder. Secure safety belt around pt at pelvic/hip level. Return pt's torso to wheelchair back.
- ____ 4. Larger parts of front casters need to be forward. Scoot pt's hips forward ½ seat of wheelchair by therapist sitting on mat, bracing wheelchair with foot, pulling pt forward from behind the knees.
- ____ 5. Remove armrest from mat side, remove armrest from other side, place armrests out of way. Place pt's head under your arm farthest away from the mat. Place sliding board completely under pt's thigh closest to the mat, beveled side up.
- ____ 6. Use proper therapist body mechanics, back straight, knees bent, one foot in the direction of the move, foot farthest from mat inside front caster.
- ____ 7. Therapist's hands on both sides of safety belt, get pt's verbal or nonverbal ok for the transfer. Count 1, 2, 3 using side ways momentum, slide (do not lift) pt on sliding board on the count of 3. Repeat 2 or 3 times as needed to get pt safely to mat.
- ____ 8. Therapist to keep back straight and knees bent to lower pt to mat in supine position. Do not allow pt's skin to contact or lie on any hard surfaces. Replace wheelchair parts.
- ____ 9. Therapist displays planned, efficient use of his/her time and energy. Displays problem solving skills if transfer did not go smoothly and safely.
- ____ 10. Therapist displays confidence, calmness, and firmness in pt interactions.

Appendix B

Safe Patient Transfers Course Evaluation

Please select the one answer that most corresponds with your experience.
<p>1. What was your experience with computer use prior to this course?</p> <ul style="list-style-type: none"> <input type="radio"/> I have taken an online or computer course <input type="radio"/> I have used computers in the past <input type="radio"/> I have had the OTA computer training only <input type="radio"/> I taught myself to use the computer
<p>2. My computer skills were sufficient for me to participate in this course, except</p> <ul style="list-style-type: none"> <input type="radio"/> I had trouble downloading the videos and asked for a CD of the videos <input type="radio"/> I had trouble compiling and uploading the written assignment <input type="radio"/> I had trouble taking the test <input type="radio"/> I had no problems
<p>3. If you have worked previously as a health professional, choose which answer best fits your experience. If you have not had prior safe patient transfers experience, mark that answer.</p> <ul style="list-style-type: none"> <input type="radio"/> I have not had prior safe patient transfers training. <input type="radio"/> I learned information from safe patient transfers that contradicted my earlier training. <input type="radio"/> I learned no new information from this safe patient transfers course, as I knew how to perform safe patient transfers already. <input type="radio"/> I learned additional new information from this safe patient transfers course.
<p>4. Which learning activities were the most helpful in learning the posture and lifting techniques?</p> <ul style="list-style-type: none"> <input type="radio"/> Lecture notes <input type="radio"/> Lab assignments <input type="radio"/> Videos <input type="radio"/> Practicing with classmates <input type="radio"/> Practicing at home with others
<p>5. Which learning activities were most helpful in learning the stand pivot and sliding board transfers?</p> <ul style="list-style-type: none"> <input type="radio"/> Lecture notes <input type="radio"/> Lab assignments <input type="radio"/> Videos <input type="radio"/> Practicing with classmates <input type="radio"/> Practicing at home with others
<p>6. How many of the video clips did you watch?</p> <ul style="list-style-type: none"> <input type="radio"/> 0-4 <input type="radio"/> 5-8 <input type="radio"/> 9-12

<ul style="list-style-type: none"> ○ All 15
7. What interfered with you learning the safe patient transfers techniques?
8. What would have helped you learn the safe patient transfers techniques better?
9. Did you feel sufficiently prepared to pass the safe patient transfers competency from the online information? <ul style="list-style-type: none"> ○ Yes ○ No
10. Did you feel sufficiently prepared to pass the written tests from the online information? <ul style="list-style-type: none"> ○ Yes ○ No
11. Did you feel sufficiently prepared to pass the low back injury written assignment from the online information? <ul style="list-style-type: none"> ○ Yes ○ No
12. How many total hours did you spend study/practicing for the three week safe patient transfers course? <ul style="list-style-type: none"> ○ 0-5 hours ○ 6-10 hours ○ 11-15 hours ○ 16-20 hours ○ Over 20 hours
13. Would you be interested in learning other OTA skills/competencies online? <ul style="list-style-type: none"> ○ Yes ○ No
14. Explain why you would or would not be interested in learning other OTA skills/competencies online?
15. Would you consider attending an entire OTA program online rather than commuting to lecture and labs? <ul style="list-style-type: none"> ○ Yes ○ No
16. Explain why you would or would not consider attending an entire OTA program online rather than commuting to lecture and labs?
17. How long does it take you to commute one way to attend OTA courses?

- 0-30 minutes
- 31-60 minutes
- 61-90 minutes
- Greater than 90 minutes

Thank you for participating in this survey!