

Student Perceptions of the Use and Value of Wiki Technology for the Creation and Dissemination of an Orthopedic Physical Therapy Assignment

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Background and Purpose. Although the impact of technology on learning and social interactions remains unclear, the reality is that most current college students, including graduates students, have grown up in a world immersed with technology. Today's increasingly technological world expects professionals to use technology as part of their professional activities. Engaging adult learners in higher education through assignments and activities that require use and application of technology should be part of today's educational reality.

Participants. Thirty-four students, in their second year of a Doctor of Physical Therapy degree program, enrolled in a required orthopedic physical therapy course served as a sample of convenience for this descriptive study. The sample consisted of 23 female and 13 male students, mean age of 26, and ages ranged from 23 to 35 years.

Case Description. This descriptive study used a pretest and posttest survey to investigate student perceptions of the value of, and their confidence in, setting up and disseminating a wiki-based webpage (a "wikipage") as a course requirement. The webpage was meant for investigating a clinical topic, analyzing and synthesizing the findings, and making recommendations for the physical therapy management of patients with that clinical condition.

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Students were instructed that the completed pages would serve as an interactive resource available for both classmates and the public to view. The wikipage was faculty-controlled, with an imposed organizational structure for unified formatting across pages.

Outcomes. Prior to the starting the assignment, 64.7% of students were unfamiliar with using wiki technology; 29.5% of students were concerned that it would be difficult to learn. After completion of the assignment, 85.3% of respondents indicated that wiki technology was easy to use and that they would continue to contribute to their wiki page. Additionally, 82.3% indicated that they would seek out and continue to use wiki technology in the future.

All students (100%) agreed that learning how to use wiki technology was a useful exercise and indicated that the assignment has lasting value as the information generated could be shared with a global audience and accessed easily. Students reported taking 10-40 hours (with a median of 19 hours) to complete the assignment. This median value was approximately twice as much as was anticipated prior to the beginning of the assignment, according to the pre-assignment survey data.

Discussion and Conclusion. Students valued this type of assignment. The students' satisfaction with the global readership opportunity for the final product and their interest in engaging with the technology in the future also were success indicators for this project. This project provided a foundational online resource that can be used by future student groups to engage in the collaboration that is so often associated with these types of webpages. The global nature of the web also presents interesting opportunities for global collaboration with students from

physical therapy schools across the country and the world.

Key Words: Wikipage, Orthopedics, Technology, Morphopedics.

INTRODUCTION

The books of Tapscott¹ and Prensky^{2,3} have popularized the terms "Net Generation" and "Digital Natives," applying these labels to those born around or after the time that the personal computer was first introduced to the mass marketplace (in the early 1980s). These authors have suggested that growing up with personal computing as a normal part of daily life has resulted in a generation (those born after 1984) that not only learns differently but prefers different social interaction models from prior generations. To date, these assumptions have not undergone sufficient empirical investigation to draw any definitive conclusions, thus cautioning against sweeping generalizations about the learning preferences of an entire generation.⁴⁻⁶

Although the impact of ever-increasing technology on learning preferences is not well understood, educators must recognize that today's students have grown up in a different world than they did. This is true of most students in physical therapist education programs. In 2010, the mean age of students in the United States entering physical therapist education programs accredited by the Commission on Accreditation in Physical Therapy Education (CAPTE) was reported as 24.06 (± 1.62) and the median age as 24 years (E. Price, associate director for Physical Therapist Academic Programs, CAPTE; e-mail communication; August 2012). This places most physical therapist students in the United States well inside the boundaries typically used to describe the "Net Generation." For this generation, technology has always been a part of daily life. Furthermore, the world in which we live today promises to continue to require most professionals, including physical therapists, to use technology regularly to

succeed and contribute to their profession.

Despite the increasing presence of technology in our world, several recent studies conclude that the technological comfort of college students is mixed with some students that are very “tech savvy” and eager to use technology and others that are less comfortable trying new and emerging technologies.⁵ Indeed, a number of authors report that while there has been an increase in the access to technology among the present generation, a closer inspection reveals that they only use a limited number of programs and tend to return to familiar technologies.⁷⁻⁹

The availability of computer access and personal computing has altered our expectations for student familiarity with technology and use of technology in their professional studies and in their professional work. In physical therapy, computer technology appears to be a major vehicle for communication with patients and fellow professionals. As physical therapists, our patients, clients, and colleagues increasingly seem to be turning to electronic resources for information on current topics of interest and importance. We believe it is important to introduce physical therapist students to these technologies as vehicles for resource sharing so that they develop a level of comfort and capability in sharing educational materials in electronic venues.

At the inception of the Internet, the majority of the content that was available was developed by specialist programmers with complex skill sets. The transition of the Internet from a platform designed to convey information (Web 1.0) to a platform that encourages creation of information (Web 2.0) brought with it the technology that now allows websites to be easily created and edited by novices.^{10,11} The ease of creating websites, that within just a few hours can be accessed globally, has had an exponential effect on the transference of information, as well as on who is now providing the information being transferred.

Wiki technology, first introduced by Ward Cunningham in 1994, was designed to be a “freely expandable collection of interlinked web pages . . . where each page is easily edited by any user.”¹² Wiki technology has provided an interesting opportunity for educators and students alike to contribute to depositories of information by working together on projects through a collaborative online editing process.¹³ These depositories can then become not only narrowly shared with the instructor and perhaps a few class members, but easily and broadly shared as a resource for the wider physical therapy community.

Asking students to participate in this type of endeavor can be both exciting and intimi-

dating for them as they will be publically identified as the authors of the materials, and these materials will be available to the outside world seeking accurate and useful resources on the topic. These drivers of learning, however, are consistent with basic principles of adult learning, including concepts of intrinsic motivation, the importance of seeing the real-life impact or value of what is learned, and producing products from learning.¹⁴

Inquiry-based learning,¹⁵ with a constructivist style framework, applies motivational factors commonly identified in the adult learning literature and results in students using the products of their learning and seeing the benefit for the larger community.¹⁶ Constructivist theory assumes that students learn best by actively creating, or constructing, their own learning as independent or autonomous learners.¹⁷ According to Lin and Hsieh,¹⁸ for success within the constructivist model, there must be some level of learner-centered instruction whereby the students are encouraged to discover things for themselves.

The acquisition, interpretation, and synthesis of knowledge on a specific topic that is disseminated to a wider audience should, therefore, be particularly attractive to the adult learner. The opportunity for a number of students to provide individually assigned information as well as their ability to collaborate with their peers to enhance the information provided is a widely untapped resource that could transform the learning experience for the students involved and also serve the community at large. The final product, evidence-based information with regards to a specific clinical condition clearly presented in a searchable wiki format, could become globally accessible instantly and provide the sense of purpose that motivates adult learning.

We believe that it will be increasingly important for professionals to have communication tools such as wikis as part of their professional “toolbox.” However, we started this project unsure of our students’ perception of their own readiness to learn new information-sharing technologies and unsure of their comfort with sharing their learning products with the outside world. To fully engage students in the process of creating a wikipedia based on an existing clinical syndrome, the students had to understand the gaps that currently existed in both knowledge and presentation of existing information, and they had to value the need for these gaps to be filled and shared.

There were 2 major aims of this project:

- To educate the students on the process of developing and uploading information to a wikipedia that would include student assignments as core material.

- To evaluate the students’ perception of the use of wiki technology as a mechanism to widely share clinically relevant materials prepared as a course assignment.

SUBJECTS

The subjects represent a sample of convenience. All 34 students who were enrolled in the course agreed to participate in the study and completed the pretest and posttest surveys. It was explained to the students that the mode of preparation and delivery of their assignments required them all to use the wiki format. However, they were free to accept or decline the request to complete the surveys associated with the study and were assured that all survey data (including who chose to complete the surveys) would be kept confidential and unavailable to the course instructor.

METHODS

As part of an orthopedic physical therapy course at our institution, students complete a written assignment that requires them to investigate an orthopedically focused clinical condition, analyze the evidence associated with the condition, and then synthesize the evidence to provide a detailed report on the typical physical therapy management of a patient with this condition. Typically these lengthy written papers are only shared with the course instructor. Students often comment that they perceive these assignments as “busy work.” Indeed, the amount of effort that goes into the assignment is typically quite high and the quality of the products is very good. However, no one other than the student and instructor typically read the work. With this in mind, we asked students to “publish” their assignments on a faculty-controlled wikipedia where their work would be available for wider consumption.

This descriptive study investigated the perceptions of a class of second-year Doctor of Physical Therapy degree students in the preparation and completion of an online wiki-based assignment in place of a regular written paper assignment. Ethical approval for the study was granted by Marymount University’s Institutional Review Board prior to the administration of the first of 2 surveys designed to demonstrate the students’ perception of the technology, the value of the assignment, and their perception of the importance of such online submissions.

Environment

The Doctor of Physical Therapy degree program at Marymount University is a 3-year, modified, problem-based program. The first

year of the program provides a wide range of foundational content. In years 2 and 3, using a systems approach, each semester focuses on a different system. Fall of year 2 focuses on the musculoskeletal system. One large course covers the peripheral musculoskeletal system and another closely interrelated course covers the spinal musculoskeletal system. The primary instructor for these courses is the lead author of this study.

Traditionally in year 2, students have been required to submit a written evidence-based assignment that focused on a specific clinical condition, either peripheral or spinal, that was of particular interest to the student. This graded assignment formed part of the overall grade for the course. This study substituted a wikipage for the traditional written assignment.

Description of the Assignment

The wikipage version of an assignment, previously completed in standard written format, required students to investigate a specific clinical topic and then analyze and synthesize their findings to make recommendations for physical therapy management of patients with that clinical condition. Students were provided a list of commonly occurring clinical conditions as suggestions. They could choose from that list (1 student to each condition), or select an alternative condition of their preference as long as it focused on a peripheral musculoskeletal condition and was different from the topics of other students in the class.

Students were instructed that the page they were creating was to be an interactive resource and would be available for both classmates and the public to view. They were shown how to link to other webpages, how to insert images, and how to use video clips that would enhance their page and more effectively communicate the information they wished the reader to receive. It was anticipated that these skills would encourage creativity within the provided framework, as opposed to stifling it. The students also were shown how to appropriately reference information used within their page to assure appropriate referencing as it may differ from traditional referencing. Students could prepare their material first with standard word processing programs and then cut and paste into the wikipage.

With a wiki essentially being little more than a collection of webpages,¹⁹ there was some concern over the final appearance of this collection of individualized pages. In order to provide some level of uniformity, a template was established that specified headings that students were required to use. These headings included the following: Description,

Anatomy, Indications, Incidence/Prevalence, Clinical Presentation, Etiologies, Diagnostic tests, Conservative Treatment, Surgical Management, Use of Modalities, Web-Based Resources, and References. While some authors suggest that this may limit the creativity of the students, and thereby limit the effectiveness of the wiki format,¹³ faculty felt that the nature of the collective wiki that was being created would benefit more from a more uniform presentation of information.

The students were instructed to think of this assignment in terms of developing a resource that provided sufficient information for them, or other physical therapist students, to review prior to sitting for the licensure examination. This instruction gave the students direction with regard to the level of detail that was required and the intent and purpose of the assignment. Wiki-style websites are designed for collaboration, however, while the students were encouraged to look at other pages as they developed their own page, they were asked not to collaborate with their peers at this stage.

With regard to management and control of the information released to the public via this wiki, the course instructor created a password-protected site where only members accepted by the instructor could gain editing rights. In this way, while the information was viewable by anyone with a web browser, only those accepted by the instructor could create or edit pages within the site. As students developed their individual pages, the course instructor monitored the number of changes that each student made to their individual page. Each time a change was made to a particular page, and that change was saved, the instructor received an automatic e-mail indicating the change and providing a history of the development of each page. In this way, the quality of the information could be verified and the security of the site and the information presented could be overseen and assured.

Survey Instruments

Pre- and post-assignment surveys were developed by faculty involved in this study. Face and content validity were established by asking a random sample of 8 physical therapist students who had completed the wikipage assignment the previous year to complete the draft surveys and provide feedback on the clarity and comprehensiveness of survey items. Group feedback was provided and the items were modified until consensus was reached on the language and content of survey items. The surveys sought to identify the students' interest in the topic, confidence with the technology, and perceptions of the value of the assignment. The pre-assignment

survey was completed after the assignment had been explained to the students but before they started working on it. The post-assignment survey was administered after the assignment was completed, but prior to grading to eliminate any potential bias that grading may provide.

The pre- and post-assignment surveys used typical 6-point Likert scales with 3 options representing agreement with the statements (strongly agree, agree, agree somewhat) and 3 representing disagreement (strongly disagree, disagree, disagree somewhat). In addition, the post-assignment survey offered an opportunity for additional comments by asking students to list 3 things that they most liked about the assignment and 3 things that they least liked.

Data Collection

Each survey was administered to the students at the end of a scheduled class and students were allocated sufficient time to complete each survey. All 34 students completed both pre- and post-assignment surveys. On both occasions, the course instructor distributed the surveys and left the room after giving instructions that the completed surveys be placed in a large envelope and brought to the administrative assistant. A cover page on the survey identified each respondent by name. The administrative assistant assigned each student a randomly generated number (using a random number table) and kept a password-protected list of these names and associated numbers. When she was given the completed surveys, she removed and discarded the cover sheet that identified the student by name and replaced it with the assigned identification number. Only the administrative assistant had access to the file linking names to numbers. The investigators were blinded to names associated with individual responses.

Data Analysis

The responses for the pre- and the post-assignment surveys were entered into SPSS Version 18²⁰ for basic analysis. The Likert responses were entered and analyzed. To simplify the interpretation of the data, responses were aggregated into dichotomous ordinal categories for each of question. Responses of strongly agree, agree, or somewhat agree were aggregated together and labeled "agree." Responses of strongly disagree, disagree, or somewhat disagree were aggregated together and labeled "disagree." The pre- and post-assignment survey scores and the open-ended written responses collected from the post-assignment survey were reviewed by both authors separately and grouped into categories for presentation and discussion.

Table 1. Students' Pre-assignment Perceptions of the Use of Wiki technology and the Value of the Assignment (N = 34)

Pre-test Survey Questions	Agree ^a % of total	Disagree ^b % of total
I am familiar with using wikidot technology.	35.3	64.7
I should have little difficulty using this technology to create and share my assignment.	70.5	29.5
Learning this new technology is valuable.	97.1	2.9
I am interested in the topic I have chosen for this assignment.	100	0
This assignment is appropriately challenging.	94.1	5.9
This assignment is worthwhile.	100	0
The content of my wikipage will be will be useful to my classmates.	100	0
The content of my wikipage will be useful to the general PT working in orthopedics.	100	0
I am confident in my ability to translate and apply research findings to my assigned clinical syndrome topic.	91.2	8.8
Number of hours I expect to dedicate to completing this assignment:	Median = 9 Range = 4–25	

^a Represents aggregation of all responses representing agreement with the statement: strongly agree, agree, or agree somewhat.

^b Represents aggregation of all responses representing disagreement with the statement: strongly disagree, disagree, disagree somewhat.

RESULTS

Thirty-four students agreed to participate in the present research and completed both pre- and post-assignment surveys having completed the wiki-based assignment. There were 23 female and 13 male students, with an age range of 23–35 years and a mean age of 26 years. This was the first wiki-based assignment that the students had been exposed to within the Doctor of Physical Therapy degree program.

Pre-assignment Survey

The results for the pre-assignment survey are presented in Table 1 with the aggregate scores for the “Agree” and the “Disagree” categories presented as percentages of the total group. Of the students, 35.3% indicated that they were familiar with using wiki sites prior to this assignment and 70.5% were confident that they would have little difficulty using the technology to create or share their assignment. Out of the 34 students, 97.1% believed that learning the technology would be valuable and 94.1% believed that the assignment would be appropriately challenging. All students indicated that the assignment would be worthwhile and that the material posted

would be of a high quality and useful to practicing physical therapists and fellow students. Finally, the group was asked to estimate the amount of time that they anticipated spending in the completion of this assignment. While the range of answers spanned 4–25 hours, both the mean and the median response were 9 hours.

Post-assignment Survey

The results for the post-assignment survey are presented in Table 2 with the aggregate scores for the “Agree” and the “Disagree” categories presented as percentages of the total group. The second survey was given approximately 12 weeks after the administration of the pre-assignment survey and 1 week after submission of the completed assignment. A total of 82.3% of respondents indicated that they would seek out and use wiki technology in the future, and 85.3% indicated that they would continue to contribute to their page, and others, in the future. The same amount, 85.3%, of respondents classified using the technology as “easy,” with 100% acknowledging that learning how to use wiki technology was a useful exercise.

Of the students, 95.2% identified this as-

ignment as being appropriately challenging, and 97.1% stated that this assignment was not “busy work.” All of the respondents indicated that they believed the assignment to have lasting value and that they were interested in how frequently their page was accessed (readership). There was 100% agreement among the group that the material posted by the class was of high quality and that material was indeed useful to the wider orthopedic physical therapy population. With regard to the amount of time actually spent in the completion of this assignment, the range of hours stated was 10–40 hours, with a median of 19 hours. This median value was approximately twice as much as was anticipated prior to the beginning of the assignment. Some potential reasons for this increase in completion time were brought out in the students' written responses on what they liked most and least about the assignment.

Student Comments on Most- and Least-Liked Aspects of the Assignment

At the end of the second survey, students were asked to provide 3 things that they liked the most about this assignment and 3 things that they liked the least about this assignment. All respondents (100%) provided feedback on what they liked the most about the assignment; 88% of respondents provided information on what they liked the least. After reading all responses, the authors placed each comment with similar comments for ease of explanation and discovered very definite categories (Table 3).

The categories identified as most-liked included:

- (1) Learning about a clinical topic that I was interested in.
- (2) Learning about and feeling successful in applying the technology.
- (3) Pride and sense of value in my work that would be publically available and utilized by others.
- (4) Having access to the work of others for future reference.

Table 4 displays the agreed upon categories for student comments on what they liked the least. The categories for these comments are:

- (1) Length of time to complete was too great.
- (2) Limited formatting capabilities of the wikipage.
- (3) Lack of training on creating wikipages.

Table 2. Student Post-assignment Perceptions of the Use of Wiki Technology and the Value of the Assignment (N = 34)

Post-test Survey Questions	Agree ^a % of total	Disagree ^b % of total
I will seek out and use wiki technology in the future as a medium to share learning materials.	82.3	17.7
Using wiki technology was easy.	85.3	14.7
Using wiki technology to create my clinical syndrome page was a valuable experience.	100	0
I was interested in the topic I chose for the assignment.	100	0
This assignment was appropriately challenging.	95.2	4.8
I am interested in knowing how many times my wikipedia is accessed over the next 6 months.	100	0
When considered together, the material posted by the class for this assignment was of high quality.	100	0
This assignment has no lasting value.	0	100
I will continue to contribute to both my own page and other pages on this site in the future.	85.3	14.7
When considered together, the material posted by the class for this assignment is useful to the outside orthopedic PT community.	100	0
I am confident in my ability to translate and apply research findings to my clinical syndrome topic.	100	0
I reviewed other student's clinical syndrome pages as I prepared my page to ensure I was on par with the class.	100	0
This assignment was nothing more than busy work.	2.9	97.1
Number of hours dedicated to this assignment:	Median = 19 Range = 10-40	

^aRepresents aggregation of all responses representing agreement with the following statement: strongly agree, agree, or agree somewhat.

^bRepresents aggregation of all responses representing disagreement with the following statement: strongly disagree, disagree, or disagree somewhat.

Table 3. Three Things Students Liked Most About This Assignment

Categories of Comments	Selection of Representative Comments
1. Learning about a clinical topic that I was interested in.	<ul style="list-style-type: none"> • Learning more about a pathology I have experienced. • Was able to learn a lot about my topic and others by reading their pages. • The opportunity to become "expert" on a topic of true interest. • Encouraged me to synthesize clinical reasoning with the anatomy.
2. Learning about and feeling successful in applying the technology.	<ul style="list-style-type: none"> • Gaining confidence in creating a webpage. • I really liked how we were able to incorporate videos and pictures to the assignment to make it more interesting. • Learning how to navigate a webpage and gaining confidence with my ability to use the technology. • I've never made a website before so it was cool to learn how!
3. Pride and sense of value in my work that would be publicly available and utilized by others.	<ul style="list-style-type: none"> • Contributing in a positive way and creating a valuable source of information for other people. • It was an interesting way to do a clinical syndrome project that would be useful for others in the future. • Doing something I knew would provide good information for other PTs and the patients that need it. • It was an effective and efficient use of my time . . . and the only writing assignment that had any value to me this semester.
4. Having access to the work of others for future reference.	<ul style="list-style-type: none"> • The end product is a lasting educational site. • Awesome to have this site, so I know where to go when I have to get info on clinical syndromes. • Having this website as a tool/resource for the future. • Reading the other clinical syndrome pages was helpful and a quick source to supplement tutorials throughout the semester.

Table 4. Three Things Students Liked Least About This Assignment

Categories of Comments	Selection of Comments
1. Length of time to complete the assignment	<ul style="list-style-type: none"> • Time consuming, if you don't know what you are doing. • Took longer than anticipated—misjudged. • Took time getting used to the software. • How much time it took.
2. Limited formatting capabilities of the wiki page.	<ul style="list-style-type: none"> • Frustration in getting pictures and tables to format properly. • Limited formatting capabilities of the page. • I wish there was a text alignment feature, or maybe I didn't see if there was one, so it would look good. • Readjusting the coding so the formatting on the page looked nice was a bit time consuming, but maybe there was a more efficient way to do this and I was not aware of it.
3. Lack of training on creating wiki pages.	<ul style="list-style-type: none"> • I felt like I could have used a tutorial on how to create the page. • Frustrating to figure out the system, but not bad once you did. • Learning how to upload my project to the webpage with the appropriate coding necessary. • Not having a clue how to use the wikidot originally, I found a guide online.

DISCUSSION AND CONCLUSION

The education of a growing generation of students immersed in a digital world provides new learning opportunities. While it is apparent that today's educators and today's students have grown up with widely different levels of access to technology, the truth remains that educators have the knowledge required by the students to be successful in their chosen profession and that both groups exist in a world immersed in technology. The potential for motivating and engaging today's students through the creation of informational technology deemed beneficial to a broad audience is real and exciting. In this study, we assessed the perceptions of a group of physical therapist students as they completed an online assignment to create orthopedic clinical syndrome pages to populate an orthopedics-based wikipedia. This digital assignment took the place of a more traditional written assignment and provided the students with the opportunity to create and publish a webpage that would benefit patients, physical therapy clinicians, and fellow physical therapist students.

Two surveys were administered, 1 before the commencement of the assignment and the other 1 week after the completion of the assignment, but before grading of the assignment. This assignment was designed in such a way that it fulfilled all academic rigor commonly attributed to a typical written assignment; appropriate guidance was offered, a clear set of objectives was given for the assignment, and a rubric was created for ultimate evaluation of the quality of the work. The pre-assignment survey identified that the majority of these students had little or no experience with wiki technology prior to the commencement of the assignment. Interest-

ingly, despite this lack of prior engagement, the majority of the students anticipated no real problems with using the technology. To this end, the lead faculty provided an overview of the site and the basic functionality of the process of developing a page, but did not provide in-depth training initially. The post-assignment survey indicated that while the students valued the experience of using wiki technology in the creation of their page, there was a level of frustration that occurred due to the lack of training received with regard to manipulating the formatting of the pages themselves.

An overwhelming majority of respondents (95.2%) reported that this assignment was sufficiently challenging, which provided supporting evidence for the use of a digital assignment such as this. Regardless of the final presentation format, educators seek to provide assignments that will challenge and stimulate their students. The results of this survey suggest that this goal was accomplished in this instance. With regard to the engagement cited in the literature that adult students gravitate towards, the post-assignment survey indicated that the students fully took ownership of the value and importance of this assignment, with 97.1% believing that this assignment was more than simply busy work. Indeed, 100% of the respondents indicated that the product they created would be useful to themselves and their classmates in the future as well as demonstrating an understanding that this wiki had a wider reach to the broader physical therapy community.

As the semester developed and students began to create their pages, there was an increasing request as to how many hits each page was receiving. The students had a desire to be a part of something that had value to

others, and they were able to monitor this by tracking the traffic that was passing through the site. As time progressed through the end of the semester, and the early part of the following semester, the lead faculty shared information as to the number of page hits and unique visitors to the site.

In the written comments provided in the post-assignment survey, the students were very positive in their experience with this assignment. The comments clearly displayed that while this technology may have been novel to many of them at the beginning of the semester, their experience during the process and the value that the final published product provided was sufficient to encourage them to engage with wiki technology in the future. The collaborative aspect of wiki technology was strongly identified as a key component.¹⁵ Indeed, the potential for collaboration between students in the same class exists, but this collaboration could be extended to include students from other institutions, clinicians, and faculty from other locations. The very nature of wiki technology not only provides for this type of collaboration, but encourages it.

The comments related to the least-liked aspects of the assignment provided some interesting academic challenges that should be addressed prior to any further work of this type. While the students' perceptions of their own abilities suggested that training was not necessary, it was apparent through the comments that increased access to training with regards to formatting would enhance the students' experience even more. This is a relatively easy fix with guidelines and training videos currently existing online, or easily reproduced with a specific emphasis on the needs of this particular wiki assignment.

Students also spent approximately twice as many hours in the completion of this assignment than they had anticipated in the pre-assignment survey. With the number of students referencing formatting struggles and greater amounts of time for completion, it would appear that improved training at the outset of the assignment coupled with available online training for specific formatting concerns would certainly help. Faculty involved with this project did agree, however, that some of the under-estimation of the required time for completion might simply have been an over-confidence on the part of the students, which is shown in some degree in the results of the pre-assignment survey.

Regardless of the differences that have been perceived between generations with respect to the use of technology, this study has shown that it is possible to transform a typical written assignment into a digital assignment that not only engages the student to complete an assigned piece of coursework, but challenges them to provide useable information for professional peers and patients alike. Twenty-four months after going live, the student-populated wiki site (<http://morphopedics.com>) had received over 300,000 page views.

Limitations

Despite the engagement of the students and the apparent success of the assignment with regard to providing a useable resource to a global audience, there were a number of limitations that should be considered. The first limitation was a technological one. As the students were creating their wikispaces, the information that was being prepared and presented was actually live to the web prior to faculty review. As each student added information to their page and edited that information, the lead author was informed of the changes via automatic e-mail; however, with such a large group of students making edits at the same time—there were periods when the information could not be reviewed by faculty prior to being live to the web.

The second limitation with this study was the short period of time between pre- and post-assignment surveys, as this assignment was completed within the confines of a typical college semester. There may have been

some measure of memory by the students of their responses from the pre-assignment surveys. Finally, this study does not address potential collaboration, a key design of wiki-type websites. Future publications should address the use of the information that has been uploaded and any collaborative editing that could be provided by students to their colleagues' wikispaces. With a growing number of online assignments such as this, there is a constant concern over originality of the work, and even a concern over the citing of work within the wiki. These concerns must be addressed at the beginning of the assignment and monitored closely as the students construct and develop their individual wikispaces.

Overall, the students' satisfaction with the final product that was shared globally and their interest in engaging with the technology in the future were rewarding successes. This project has provided a foundational online resource that can be used by future student groups to engage in the collaboration that is so often associated with these types of websites. The global nature of the resource also presents interesting opportunities for global collaboration with students not only from alternate physical therapist education classes within the same program, but from alternate physical therapist education programs across the United States and globally.

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