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# Reaching the Masses: Physical Therapist Students Learn to Use YouTube to Share Clinical Information with Patients and the Public

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### ABSTRACT

**Purposes:** This pilot study (1) assessed physical therapist students' attitudes toward using YouTube to share health-related videos on the Internet, and (2) determined whether a cohort of physical therapist students would use YouTube, or similar technologies, to share educational information with other health care providers and health care consumers once they enter practice. **Methods:** A cohort of 28-second-year Doctor of Physical Therapy students completed a project to produce and share educational videos on YouTube. Students, working in small groups, selected a clinical skill introduced and practiced during the Cardiopulmonary Physical Therapy course as the focus of their videos. A survey completed at the conclusion of the project collected data about students' attitudes and experiences regarding the use of YouTube. **Results:** Tabulation of students' responses revealed that 85% of the students enjoyed making videos and 96% of the students felt that physical therapists should share physical therapy-related information with the largest possible audience. Nineteen percent of the students reported that they are likely to share additional videos online. **Conclusion:** YouTube and other online video sites allow physical therapists to reach a large audience of people interested in the services and education they provide. However, some students may be reluctant to take advantage of this relatively new technology. Future research may focus on the relationship between the obligation students feel to produce educational videos and their reported reluctance to produce educational videos once they enter clinical practice.

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### INTRODUCTION

Today's health care environment is quickly evolving. New video technologies allow physicians to communicate and assist with surgeries without being in the operating room, case managers and families to tour rehabilitation facilities without leaving the bedside, and therapists to demonstrate therapeutic exercises to patients who are unable to come to the clinic.<sup>1-3</sup> In order to meet the challenges of this rapidly changing environment, health profession educators must find or develop cost-effective technologies to provide students with the tools and knowledge necessary to safely and efficiently treat and educate patients. One of the more pervasive new technologies available to health care providers and educators is online video streaming from Internet websites like YouTube ([www.youtube.com](http://www.youtube.com)). YouTube, founded in 2005, allows users to easily view and share videos with a broad audience.<sup>4</sup> While much of the video content on YouTube is unrelated to health, the potential to share information that promotes and displays health-related issues is immense.

Over a three month period ending December 8, 2009, the Internet tracking website, Alexa ([www.alexa.com](http://www.alexa.com)) ranked YouTube as the fourth most visited website on the World Wide Web.<sup>5</sup> According to a Princeton Survey Research International telephone poll, the popularity of YouTube among adults has increased rapidly in just a few years.<sup>6</sup> The report found that, as of 2009, 62% of adult Internet users reported watching online videos, compared to 33% in December of 2006. Among the oldest age groups studied, 41% of Internet users 50-64 years of age, and 27% of Internet users 65+ years of age view online videos. These figures

are up from 2008, when only 34% of Internet users 50-64 years old reported watching online videos, and 19% of Internet users 65+ years old reported watching online videos.<sup>6</sup> Along with the increasing numbers of people viewing content on YouTube, a recent Pew report indicated that many people are using the Internet to access health-related information.<sup>7</sup> In the report, researchers stated that for Internet users 55-63 years old and 73 years of age and older, searching for health-related information was the third most popular online activity, exceeded only by email and online search.<sup>7</sup> Similarly, adults 33-54 and 64-72 years of age report using the Internet to research health-related material more than any other activity except email, search engines, and product research.<sup>7</sup>

Promotion of health and wellness and education of those interested in learning about health topics are vital components of a health care provider's practice. YouTube provides a medium that enables health care providers to reach a large audience interested in obtaining health-related information. As more health care consumers begin to access information on the Internet, it is important to introduce YouTube, and other clinically relevant technologies, to students during their academic preparation. A 2009 study by Burke and colleagues reported that 41.7% of health education faculty utilized YouTube in the classroom. Some of the more popular uses of YouTube include providing informational material to students and stimulating in-class discussions and debates.<sup>8</sup>

Many of the clients that physical therapists treat may benefit from video content on YouTube. Video improves the health care provider's ability to reach a broad audience, particularly the elderly and those with special needs.<sup>9-11</sup> In the elderly population, video is effective at increasing awareness of conditions that may result in falls, and improving functional outcomes following hip repair surgery.<sup>12,13</sup> Within the deaf community, YouTube has broad appeal as a way to communicate and share information regarding medical and social issues.<sup>10</sup>

This pilot study required that physical therapist students complete a project to create and share educational videos on YouTube. At the conclusion of the project, students voluntarily completed a survey about the project. The objectives of this study were: (1) assess a cohort of physical therapist students' attitudes toward the use of YouTube and video technology to share health-related information, and (2) assess whether students believe they will use YouTube to share educational information once they enter autonomous practice.

## **METHODS**

### **Subjects**

A cohort of 28 Doctor of Physical Therapy Students (DPT) at a public university in the southeastern United States participated in the study. The students were in the second year of the three-year post-baccalaureate DPT program. The DPT curriculum includes a combination of didactic classroom and laboratory education, as well as, 34-weeks of supervised clinical internships.

### **Procedures**

The principle investigator obtained Institutional Review Board approval and informed consent prior to collecting data. The project and data collection took place during the required second-year Cardiopulmonary Physical Therapy course. The YouTube project required students produce and share brief videos demonstrating a clinical skill used in the practice of cardiopulmonary physical therapy. To begin the project, the class divided themselves into groups of 5 or fewer students. Each group selected a clinical skill previously discussed and practiced in class. Once the instructor approved the selection of the clinical skill, student groups worked outside of regularly scheduled class time to practice, record, edit, and upload their videos to YouTube. Skills selected by the groups included auscultation of the heart and lungs; patient positioning for drainage of mucus secretions from the lungs; techniques to encourage patients to cough to clear mucus secretions from airways; and exercise tests to predict aerobic capacity. The instructor offered technical assistance to each of the groups; however, only one of the six groups requested assistance, which required less than 30-minutes of the instructor's time. The instructor also gave student groups the option to make their videos available to the public or to share them in YouTube's private section. Groups choosing to make the videos private had to grant the instructor access to their video for evaluation.

During the project's introduction, students viewed three different videos posted on YouTube by health care professionals in fields other than physical therapy. Each of the videos depicted a specific clinical skill targeted to the general public and health care providers. For example, students viewed a video of a health care practitioner instructing viewers on how to check their own blood glucose level. Following the video presentations, the instructor informed students that the expectation was for them to develop videos with production quality similar to the videos viewed in class. Lastly, students received copies of the grading rubric (Table 1).

**Table 1: Grading Rubric**

<b>Grading Criteria</b>	<b>Points Awarded/Points Possible</b>
Creative and interesting presentation of material	/20
Content accurate and complete	/20
Video clear and audible - includes eliminating distractions in the background	/10
Professional appearance (both you and the video) – no University attire	/10
Practice and rehearsal evident	/10
Evidence of group work	/10
Appropriate level - health care providers and consumers seeking information; videos should be less than 5 minutes in length	/15
Inclusion of the disclaimer	/5
	/100

After the students posted their videos on YouTube, the course instructor assessed the videos based on criteria listed in the grading rubric. Video creativity, content accuracy, and appropriateness for target audience received increased grading weight because these items were most supportive of course and project objectives. Each of the groups received passing grades on the project. During the last week of the semester, 27 of the 28 students enrolled in the course completed a voluntary survey. Students completed the surveys after posting the videos, but before instructor evaluation of the videos.

### **Materials**

Materials and supplies used to create and produce the videos varied from group to group. Minimum equipment requirements included a camera capable of capturing video and sound, video editing software, and a computer capable of editing video and connecting to the Internet. Since students in the DPT Program are required to own notebook computers with wireless connectivity prior to enrolling in the program, the expectation was that equipment costs for this project would be minimal. Students wishing to utilize dedicated video cameras, tripods, and/or external microphones could borrow these items from the instructor. Students were encouraged to use free video editing software when available. Only one of the six groups requested the use of additional equipment – an external microphone.

### **Students' Assessment of the Project**

Each consenting student completed a written survey near the end of the semester. The survey contained statements that asked students about their attitudes toward the project, YouTube, technology, the role of technology in sharing health-related information, and the possibility that they would use video streaming technologies in their practices as physical therapists. The statements in the anonymous survey were evaluated on a 5 point Likert rating scale using the phrases “agree”, “strongly agree”, “disagree”, “strongly disagree” or “neutral” (Appendix). In addition to the Likert rating scale questions, students answered several open-ended questions about the project.

The author of the study developed the survey prior to initiating the project. While project participation was a course requirement, completion of the survey was anonymous and voluntary. Students were not penalized or rewarded for completing the survey. The survey questions reflected the objectives of the study. For instance, questions asking students if they enjoyed making videos, editing videos, and uploading videos to YouTube, measured the first objective of the study – assessment of attitudes toward the use of YouTube. Questions concerning the future use of YouTube and the responsibility physical therapists have to share information with other practitioners and the public addressed the study's second objective – the obligation physical therapists feel to share health-related information with as broad an audience as possible.

### **Data Analysis**

Response frequency and percentages for each survey question were tabulated using Microsoft Excel 2007.

### **RESULTS**

Twenty-seven of the 28 students enrolled in the course completed the survey for a response rate of 96.4%. A majority of student respondents either agreed or strongly agreed that they enjoyed using technology and that it would play a role in their future practice as physical therapists. In addition, 96.3% of student respondents felt that physical therapists should share physical therapy-related information with as large an audience as possible, while the remaining 3.7% felt neutral. When asked if they found technology intimidating, 51.8% disagreed or strongly disagreed, while 25.9% agreed or strongly agreed that technology was intimidating; 22.2% felt neutral. In terms of actual video production, all survey participants reported that they enjoyed making the video or felt neutral about the process; none reported that they did not enjoy making the video. Editing and uploading the

video yielded mixed results; while many agreed or strongly agreed that editing and uploading were easy, several students indicated that they had difficulty with those processes. When asked if they were likely to share videos in the future, 37% indicated that they were unlikely to share videos, while 18.5% indicated that they were likely to share videos in the future. The remaining respondents were neutral (Table 2).

**Table 2: Survey Results (n=27)**

	Strongly Agree (n)	Agree (n)	Neutral (n)	Disagree (n)	Strongly Disagree (n)
I enjoyed making the video.	51.9% (14)	33.3% (9)	14.8% (4)	0% (0)	0% (0)
Editing the video was easy	3.7% (1)	29.6% (8)	48.1% (13)	18.5% (5)	0% (0)
Uploading the video to YouTube was easy	22.2% (6)	44.4% (12)	22.2% (6)	11.1% (3)	0% (0)
I enjoy using technology.	25.9% (7)	44.4% (12)	22.2% (6)	0.07% (2)	0% (0)
I find technology intimidating.	3.7% (1)	22.2% (6)	22.2% (6)	33.3% (9)	18.5% (5)
Physical Therapists should share physical therapy-related information with as large an audience as possible.	63% (17)	33.3% (9)	3.7% (1)	0% (0)	0% (0)
Technology will play a role in my practice as a physical therapist.	40.7% (11)	51.9% (14)	7.4% (2)	0% (0)	0% (0)
I will likely post health-related videos online once I enter practice.	7.4% (2)	11.1% (3)	44.4% (12)	18.5% (5)	18.5% (5)

## DISCUSSION

One of the more interesting findings of this study was that 85% of the students enjoyed making the videos and 93% acknowledged that technology would play an important role in their professional practices. However, only 19% of the students agreed that they would share videos once they entered clinical practice. The discrepancy between the high percentage that enjoyed making the videos and the lower percentage of students that are not likely to share videos could relate to technical challenges some of the students encountered while editing and uploading video. Only 33.3% of the students agreed or strongly agreed that video editing was easy, while a majority of students felt either neutral about video editing or disagreed that editing was easy. This is not surprising given the multitude of software solutions available for video editing and the time required to master any one video editing software package. It is encouraging that so many students in this cohort had a positive experience making the video. Perhaps, with additional exposure to the process, more students would be inclined to produce educational videos once they enter clinical practice.

The open-ended questions regarding time and money spent to produce the videos were asked to determine what hurdles might exist to limit the widespread use of YouTube for patient and clinician education. Time may have been an important factor. Groups spent a range of two to 10 hours on the project. However, time to produce a video is likely to decrease with practice, experience, and training.<sup>14</sup> In addition, once a video is developed, clinicians may refer multiple patients and clients to the website, rather than spending treatment time reviewing information contained in the video with individual clients. Cost did not seem to be an important factor for this cohort, as only one group incurred any direct costs: \$4 for music. However, cost could be an obstacle for a clinician if they do not have access to a computer and video camera. Direct costs will effectively decrease once the video is uploaded and the clinician is able to refer several patients to the video.

The use of open-ended questions allowed students to describe the challenges they faced while completing the project. Some of the challenges encountered related to group dynamics, video editing, trying to make the video interesting, and difficulties uploading video to YouTube. While some of the individuals reported no challenges, other comments included:

- “arranging times that we all could meet and evenly distributing work”
- “hard to get everyone together at the same time”
- “bad acting”

- “video editing was time consuming” and “trouble trimming the video clip”
- “uploading problems”

As with any unfamiliar technology, challenges exist. With practice and continued exposure, overcoming many of the reported challenges is possible. See Table 3 for a summary of responses to open ended questions.

**Table 3: Summary of open-ended responses**

Question	Response and/or Response Frequency
How much time did you spend on this project?	≤3 hours: 12 responses 4-6 hours: 6 responses 7-10 hours: 5 responses > 10 hours: 2 responses No Response: 2
Is it worth 12.5% of your total grade?	Yes: 14 No: 4; all reported worth less than 12.5% of final grade No response: 9
What challenges did you face while filming, producing, and sharing the video? (Some students listed multiple challenges spanning more than one category)	Technical: 14; included difficulty editing and uploading video, and equipment problems Organizational: 6; included arranging meetings and division of labor Other: 3; creative differences, not wanting to be seen or heard on the video, bad acting None: 8 No Response: 0
What did you like about the project?	Creative outlet: 6 Something different: 7 Technical aspects of project: 2 Sharing knowledge/impacting others: 10 Fun: 5 Good practice: 2 No response: 0
What did you dislike about the project? What would you change?	Technical problems: 5 Organizing group meetings and assignments: 3 Should do this in all clinical courses: 1 Nothing: 9 Worth too much of the final grade: 1 Unclear instructions: 1 No Response: 4 Other: 5; assignment too limited and due date too late in the semester
Did you have to purchase anything to complete the project? What was your total cost?	No: 23 Yes: one group of four students purchased \$4.00 in music

*Not every survey participant responded to each open-ended question. In addition, individual members of the same group may have spent more or less time/effort performing different parts of the project depending upon how the group divided labor.*

A challenge for those preparing clinicians for autonomous practice is to try to exploit the technologies people already utilize. The Internet, and YouTube especially, provide an opportunity to share information with patients and other practitioners about health in general and specific health-related topics.<sup>8,15-18</sup> Video shown to patients prior to medical procedures increases knowledge about the procedure, and decreases physiological responses, such as anxiety and pain, associated with the procedure.<sup>11</sup> In addition, video improves comprehension and material retention compared to traditional educational methods.<sup>15,19</sup> With the rising popularity of YouTube, physical therapists may easily share a home exercise program with a single patient, or share information about proper body mechanics with the general public. Class projects, similar to the project presented here, serve to familiarize students with current technology and may encourage its use clinically as an educational tool.<sup>20</sup>

This project has broad educational application for both academics and clinicians. Students and clinicians from many clinical and health science curriculums can utilize YouTube, or other video sharing services, to demonstrate clinical skills and techniques to anyone with an interest. Projects that utilize technology may serve as an alternative to traditional lecture and lab methods to



teach clinical and other technical skills in the classroom.<sup>19,21</sup> In addition, since students become experts in the techniques and skills they share online, video production may encourage cooperative learning among groups.<sup>19,21</sup> Students may also feel a sense of gratification and a connection to their discipline when they produce a product that benefits the general public.<sup>20</sup>

### Limitations and Future Research

Limitations of this pilot study include a small sample size consisting of a single cohort of DPT students and the use of a non-validated assessment tool. Additionally, there was no attempt to measure previous use of YouTube or comfort with technology in general. Data analysis was primarily descriptive with no measurement of correlation between survey responses (i.e. correlation between students that enjoy using technology and those that were likely to use YouTube in the future). Future studies should include data collection from a larger sample spanning multiple courses and cohorts. Once a larger data sample is collected, analysis should examine the relationship between students that enjoy using technology and whether they are likely to produce educational videos in the future. Examination of the mismatch between the obligation students feel to share information and their reported reluctance to produce videos once they enter practice is a priority. Future data collection from the sample used in this study may examine if this cohort actually produces and shares educational videos in their clinical practices.

### CONCLUSION

Most survey participants reported that they enjoyed making the videos and posting them on YouTube, even though more than 50% of students reported some technical difficulty during the process. A majority of the students felt strongly that technology would play an important role in their future practices and that they had an obligation to share health-related information with as large an audience as possible. However, few students reported that they were likely to produce and share additional videos once they enter practice.

### REFERENCES

1. Karnell MP, Bailey P, Johnson L, Dragan A, Canady JW. Facilitating communication among speech pathologists treating children with cleft palate. *Cleft Palate Craniofac J*. 2005;42(6):585-8.
2. Schneider A, Wilhelm D, Doll D, Rauschenbach U, Finkenzeller M, Wirnhier H, Illgner K, Feussner H. Wireless live streaming video of surgical operations: an evaluation of communication quality. *J Telemed Telecare*. 2007;13(8):391-6.
3. Voruganti AKJ, Moyal R, Vazquez A, Burgert O. A modular video streaming method for surgical assistance in operating room networks. *Int J Comput Assist Radiol Surg*. 2010;March 10. (Epub ahead of print).
4. YouTube. Company History. <http://www.youtube.com/t/about>. Accessed August 25, 2009.
5. Alexa. Top Sites. <http://www.alexa.com/topsites>. Accessed December 8, 2009.
6. Madden M. The audience for online video-sharing sites shoots up. Pew Internet & American Life Project. <http://www.pewinternet.org/Reports/2009/13--The-Audience-for-Online-Video-Sharing-Sites-Shoots-Up.aspx>. Accessed August 19, 2009.
7. Jones S. Pew Internet project data memo: Generations online in 2009. <http://www.pewinternet.org/Reports/2009/Generations-Online-in-2009.aspx>. Accessed August 11, 2009.
8. Burke SC, Snyder S, and Rager RC. An assessment of faculty usage of YouTube as a teaching resource. *IJAHS*. 2009;7(1):1-8.
9. Brock TP, Smith SR. Using digital videos displayed on personal digital assistants (PDAs) to enhance patient education in clinical settings. *Int J Med Inform*. 2007;76(11-12):829-35.
10. Bromley BE. Broadcasting disability: an exploration of the educational potential of a video sharing web site. *J Spec Educ Technol*. 2008;23(4):1-13
11. Gagliano ME. A literature review on the efficacy of video in patient education. *J Med Educ*. 1988;63(10):785-92.
12. Hill A, Mcphail S, Hoffmann T, Hill K, Oliver D, Beer C, Brauer S, Haines T. A randomized trial comparing digital video disk with written delivery of falls prevention education for older patients in hospital. *J Am Geriatr Soc*. 2009;57(8):1458-63.
13. Tappen RM, Whitehead D, Folden SL, Hall, R. Effect of a video intervention on functional recovery following hip replacement and hip fracture repair. *Rehabil Nurs*. 2003;28(5):148-53.
14. Lim J, Pellett HH, Pellett T. Integrating digital video technology in the classroom. *Journal of Physical Education, Recreation and Dance*. 2009;80(6):40-45,55.
15. Cohen M, DiLeonardo M, Zaccariello J. Video education: a new approach to improving patient comprehension. *OT Practice*. 2009;14(16):7-8.
16. O'Donnell CR, O'Donnell L, Doval AS, Duran R, Labes, K. Reductions in STD infection subsequent to an STD clinic visit: using video-based patient education to supplement provider interactions. *Sex Transm Dis*. 1998;25(3):161-8.
17. Pandey A, Patni N, Singh A, Sood A. YouTube as a source of information on the H1N1 influenza pandemic. *Am J Prev Med*. 2010;38(3):e1-3.

18. Zapka JG, Lemon SC, Puleo E, Estabrook B, Luckmann R Erban S. Patient education for colon cancer screening: a randomized trial of video mailed before physical examination. *Ann Intern Med.* 2004;141(9):683-92.
19. Choi HJ, Johnson SD. The effect of problem based video instruction on learner satisfaction, comprehension and retention in college courses. *Brit J Educ Technol.* 2007;38(5):885-95.
20. Burke SC, Snyder SL. YouTube: an innovative learning resource for college health education courses. *International Electronic Journal of Health Education.* 2008;11:39-46.
21. Oblinger D. Boomers, gen-xers & millennials: understanding the new students. *Educause.* 2003;38(4):37-47.

**Appendix**  
**YouTube Opinion Poll**

Please report how much you agree with the following statements (1=strongly disagree, 2=disagree, 3=neutral, 4=agree, 5=strongly agree)

1. I enjoyed making the video.

1                      2                      3                      4                      5

2. Editing the video was easy.

1                      2                      3                      4                      5

3. Uploading the video to YouTube was easy.

1                      2                      3                      4                      5

4. I enjoy using technology.

1                      2                      3                      4                      5

5. I find technology intimidating.

1                      2                      3                      4                      5

6. Physical Therapists should share physical therapy-related information with as large an audience as possible.

1                      2                      3                      4                      5

7. Technology will play a role in my practice as a physical therapist.

1                      2                      3                      4                      5

8. I will likely post health-related videos online once I enter practice.

1                      2                      3                      4                      5

9. How much time did you spend on this project? Is this worth 12.5% of your total grade?

10. What challenges did you face while filming, producing, and sharing the video?

11. What did you like about this project?

12. What did you dislike about the project? What would you change?

13. Did you have to purchase anything to complete this project? What was your total cost?