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Comparison of healthcare professionals' motivations for using different online learning materials

Dennis Daniel | Traci Wolbrink

Department of Anesthesiology, Critical Care, and Pain Medicine, Boston Children's Hospital; Department of Anaesthesia, Harvard Medical School, Boston MA

Correspondence
Dennis Daniel, Boston Children's Hospital, 300 Longwood Ave, Bader 634, Boston, MA 02115, USA.
Email: dennis.daniel@childrens.harvard.edu

ABSTRACT

Importance: Online learning is increasingly prevalent throughout all stages of medical education. There is little published literature exploring what motivates healthcare professionals to engage with different types of e-learning content. Learner motivations must be understood in order to design effective educational solutions and to optimize the overall online learning experience.

Objective: Examine engagement, satisfaction, and motivations of healthcare professionals using OPENPediatrics, an open-access medical e-learning platform.

Methods: Retrospective analysis of online survey data. Users were asked to report engagement and satisfaction with the platform, as well as to select motivations for using different types of content on the site: Courses, Simulators, and World Shared Practice Forum videos.

Results: Majority of respondents were physicians and nurses in North America and Europe. Overall satisfaction with the platform was high. Most frequently cited motivations for using Courses and Simulators were: learn basic and in-depth information around topics, and learn how to deliver safer or more effective patient care. For World Shared Practice Forum videos, most commonly cited motivations were: learn in-depth information about a topic, learn the latest advances or developments in an area, and learn how to deliver safer or more effective patient care.

Interpretation: We appreciated both commonalities and differences in learning motivations among clinicians accessing different kinds of medical e-learning content. Respondents were consistently motivated to learn in order to deliver safer or more effective patient care, but they reported using different types of educational content depending on whether they were learning basic information versus updating or changing their knowledge.

KEYWORDS
Continuing medical education, Medical education, Motivations

INTRODUCTION

Online educational materials are increasingly prevalent throughout undergraduate, graduate, and continuing medical education. E-learning has numerous advantages, including accessibility, scalability, cost-effectiveness, customizability, ready standardization of approach and content, and the potential for updating content as medical knowledge continues to evolve.[1-3] Prior research has demonstrated that e-learning can positively impact

medical knowledge through a variety of implementations, including self-directed learning as well as blended learning models combining asynchronous and in-person experiences.[4-8] However, "e-learning" is not a single entity; text-heavy webpages, multimedia videos, online courses with built-in assessments, conversations on social media platforms, and interactive "serious games" all represent different forms of e-learning. Healthcare professionals are "adult learners" who are driven by their own personal experiences and needs when they decide to invest time in self-directed learning.[9] It is not clear whether these professionals are driven by differential motivations when accessing educational content in varying formats. Given the numerous and competing demands on healthcare professionals' time, and the overall low completion rates associated with online courses,[10] better understanding of the self-expressed information-seeking motivations of healthcare professionals is necessary in order to optimize utilization of educational content.

Healthcare professionals as a group are high performers who must work within complex, ever-changing systems to ensure that patients consistently receive safe, efficient, and effective care. They are constantly required to learn new things, to build on and modify their pre-existing knowledge, and to solve new problems. Gottfredson and Mosher's "Five Moments of Need" provide a helpful framework for characterizing the distinct types of learning needs that arise throughout a clinician's workflow, and can help educators better target educational interventions to address different areas of need.[11] Figure 1 describes the Five Moments of Need in more detail.
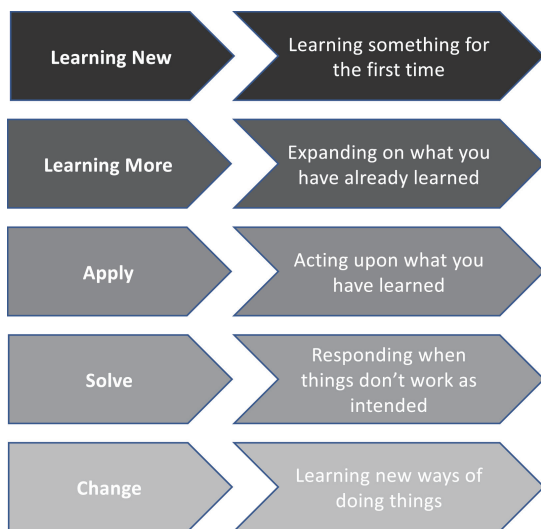
FIGURE 1 Infographic of Mosher and Gottfredson's Five Moments of Need.

Despite the proliferation of research on educational outcomes related to various kinds of e-learning, there is relatively little published literature presenting healthcare professionals' self-described motivations for engagement with different types of e-learning content. Motivations must be understood from the learner's point of view in order to design effective solutions that meet learning needs, and to optimize the overall online learning experience. Applying the framework of the Five Moments of Need to exploring healthcare professionals' motivations can help to further refine our understanding of clinician motivations while maintaining orientation to the complex factors governing clinical work.

We examined data from a survey of registered users of OPENPediatrics (www.openpediatrics.org), nearly all of whom are clinicians, in order to better understand their patterns of usage, their satisfaction with this online e-learning website, and their motivations for using different types of online educational content on the site. OPENPediatrics is an open-access medical e-learning platform that is used by pediatric healthcare professionals around the world. It contains a diverse range of online educational resources, including videos, text summaries, courses, and interactive medical simulators. We hope to provide insight into how healthcare professionals are motivated to access different types of e-learning materials, thus contributing to awareness of which instructional approaches may best lend themselves to different Moments of Need.

METHODS

We retrospectively analyzed data from the 2017 OPENPediatrics Annual User Survey, an anonymous electronic survey which contained multiple-choice and open-ended response questions. All OPENPediatrics users were invited by email to participate voluntarily in the survey from October through December 2017. The survey was administered on SurveyMonkey, a popular online survey platform. No participant identifying data were collected. Participation was optional; no incentives were provided for survey completion. Users could continue to access all OPENPediatrics content and functionality regardless of whether or not they chose to participate in the survey. Responses to individual survey questions were not mandatory, so users could choose to complete some survey questions and not others. This research activity was reviewed and approved for exemption by the Institutional Review Board at Boston Children's Hospital.

We asked users how frequently they accessed the site, the most common location from which they accessed the site, and what kinds of Internet-enabled devices they commonly used to access the site. We also assessed users' overall satisfaction with OPENPediatrics by using Likert scale questions asking whether they found the site's content to be useful, relevant to their clinical practice, and up-to-date. We also asked whether they had changed their clinical practice as a result of OPENPediatrics content, and whether they would recommend OPENPediatrics to their peers.

In order to explore more detailed clinician motivations for using OPENPediatrics content, we also asked users to select up to three of their most common motivations for accessing a particular type of content on the site. They were provided the following choices, aligned with the Five Moments of Need (in parentheses):

- Learn basic information about a topic (Learning New)
- Learn more in-depth information about a topic (Learning More)
- Learn how to solve a medical problem (Solve)
- Learn how to deliver safer or more effective patient care (Apply)
- Review things I already know (Learning More)
- Learn the latest advances or developments in an area (Change)

Participants were surveyed about their usage of three categories of content on OPENPediatrics: Courses, Simulators, and World Shared Practice Forum videos. Each of these types of content differs in both the scope of material covered, and the means by which material is presented.

- Courses on OPENPediatrics consist of curated collections of video content organized around a broad subject, separated into lessons representing topics within the overall subject. Each lesson is associated with pre- and post-lesson multiple-choice assessment questions.
- Simulators on OPENPediatrics are interactive online learning experiences which focus on helping users build a foundation in complex medical technologies such as mechanical ventilation and dialysis. They teach basic principles and then guide users through learning progressively more complex aspects of troubleshooting and management.
- The World Shared Practice Forum series presents long-form video interviews with world experts in pediatrics about the latest advances in important areas of clinical knowledge, and also encourages viewers around the world to share their own comments and experiences on the topic being discussed.

Survey data were analyzed in aggregated, de-identified fashion. Descriptive statistics were generated for multiple-choice response items. Data were analyzed using Microsoft Excel (Microsoft Corp., Washington, USA).

RESULTS

During the analyzed time period, a total of 138 survey respondents endorsed accessing at least one of the courses, simulators, or World Shared Practice Forum videos, and so were included for analysis. Table 1 reports demographic characteristics of the included survey respondents. The majority of respondents were age 35 and above, and based mostly in North America and Europe. In terms of

professional background, the majority of respondents were pediatric physicians and nurses, practicing in university-affiliated hospitals or healthcare institutions.

TABLE 1 Characteristics of survey participants

Characteristic	Number of participants, n (%)
Age range	
20–34	25 (19)
35–49	60 (43)
50–64	40 (29)
65 and above	13 (9)
Gender	
Male	68 (50)
Female	69 (50)
Region	
North America	61 (44)
Europe	31 (22)
Asia	17 (12)
South America	14 (10)
Africa	9 (7)
Oceania	3 (2)
Middle East	3 (2)
Professional Background	
Physician - Attending/Consultant	68 (49)
Physician - Trainee	18 (13)
Nurse	26 (19)
Other	26 (19)
Clinical practice setting	
University-affiliated hospital	82 (72)
Government-affiliated hospital	19 (17)
Private practice	5 (4)
Community hospital	4 (3)
Other	5 (4)
Specialty	
Pediatrics	100 (87)
Anesthesiology	7 (6)
Emergency Medicine	6 (5)
Other	2 (1)

When asked about patterns of OPENPediatrics usage, 56/137 (41%) of respondents reported visiting monthly, and 47/137 (34%) of users reported visiting weekly. Seventy-seven out of 138 (56%) respondents reported using OPENPediatrics mainly at work, and 55/138 (40%) reported accessing the site mainly at home. The majority of respondents (103/138, 75%) reported primarily accessing OPENPediatrics from a computer. Nearly half of survey respondents (66/138, 48%) had first heard about

TABLE 2 Study participant responses to OPENPediatrics satisfaction questions

Survey question	Total respondents	Respondents answering "Agree" or "Strongly Agree", n (%)
Overall, I consider OPENPediatrics to be a useful resource.	138	126 (91)
The resources on OPENPediatrics are relevant to my learning needs.	135	115 (85)
The resources on OPENPediatrics are up-to-date and reflect current best knowledge and evidence.	137	123 (90)
I would recommend OPENPediatrics to my peers.	137	128 (93)
OPENPediatrics has had a positive impact on my clinical practice.	136	106 (78)
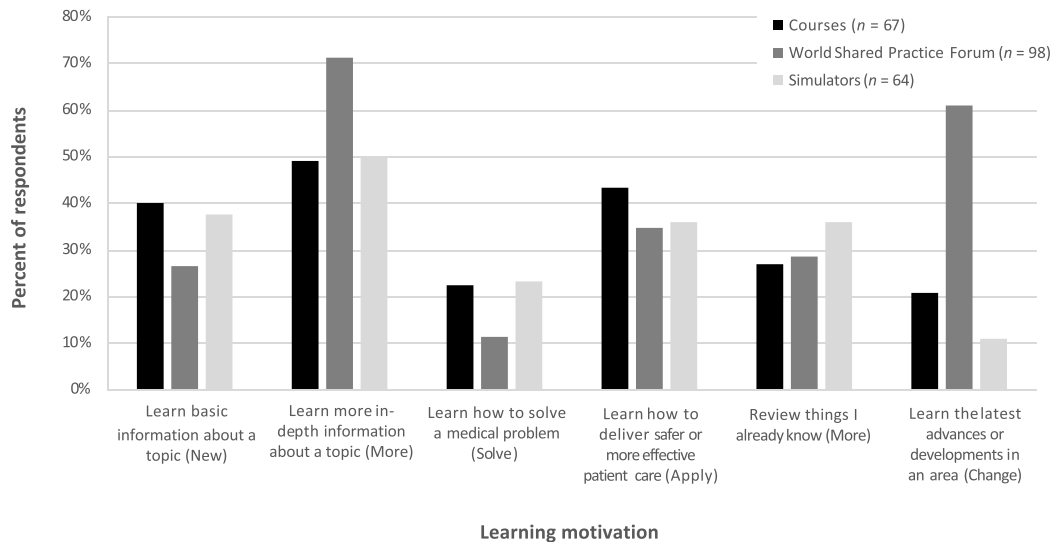
FIGURE 2 Proportion of survey respondents endorsing different learning needs for each category of online learning material.

OPENPediatrics from a peer or colleague.

Table 2 shows survey responses to the OPENPediatrics satisfaction questions. The majority of respondents agreed or strongly agreed that OPENPediatrics was useful, relevant to their learning needs, contained up-to-date content, and had a positive impact on their clinical practice. A majority of respondents also agreed or strongly agreed that they would recommend OPENPediatrics to their peers.

Figure 2 displays the percentages of respondents endorsing different learning motivations for each type of content. Of the included respondents, 67/138 (48%) endorsed using a Course, 64/138 (46%) endorsed using a Simulator, and 98/138 (71%) endorsed watching a World Shared Practice Forum video. For both Courses and Simulators on the website, the most commonly cited motivations were to learn basic and in-depth information about a topic, to learn how to deliver safer or more effective patient care, and to reinforce prior knowledge. For the World Shared Practice Forum videos, the most commonly cited motivations were to learn in-depth information about a topic, to learn the latest advances or developments in an area, and to learn how to deliver safer or more effective patient care.

DISCUSSION

This survey of healthcare professionals' use patterns of OPENPediatrics, a popular medical e-learning website, demonstrates a high degree of both engagement and satisfaction with the OPENPediatrics platform. When examining distinct types of educational content, we appreciated both commonalities and differences in expressed learning motivations. Survey respondents described using all three distinct types of content to build in-depth knowledge and to learn how to deliver safer or more effective patient care. However, we appreciated that clinicians more frequently reported motivation to access the Courses and Simulators to learn basic information about topics, and in contrast, more frequently reported motivation to access the World Shared Practice Forum videos to learn the latest advances or developments in an area. These findings support the utility of the Five Moments of Need in broadly characterizing healthcare professionals' different kinds of information needs, and are also consistent with the educational goals of the three different kinds of OPENPediatrics content.

Prior work exploring the learning motivations of healthcare professionals generally supports the notion that clinical

learners are motivated to engage with learning experiences when resources are relevant to their particular context, and when they can apply learning in order to better solve problems that are directly relevant to their daily lives.[12-21] Knowles' principles of andragogy and assumptions of adult learners are frequently cited conceptual frameworks in this regard.[22-23] There are other available conceptual frameworks for understanding motivations to learn, which vary in how they represent intrinsic and extrinsic drivers of learning activity, as well as interactions between learners and their context.[24] We find that Gottfredson and Mosher's Five Moments of Need explicitly and efficiently delineates distinct types of learning need that arise in contexts requiring high performance, but to date it has not been a widely applied framework within medical educational research.

There are several limitations to this study. Our findings are based on a previously conducted survey which requested voluntary completion from OPENPediatrics registered users. This introduces both sampling and response biases. This survey was not formally validated prior to release. The majority of respondents to the survey were practicing physicians and nurses from North America and Europe; thus, results may not be generalizable to healthcare professionals of different backgrounds, or clinicians in other regions of the world. This survey exclusively asked about OPENPediatrics and its content, not about e-learning content in general. This may impact generalizability of our findings to other types or sources of e-learning content outside of OPENPediatrics. Finally, open-ended qualitative responses may have given greater nuance of insight into the differing motivations for accessing different types of online learning content, but as this was a retrospective analysis of an already-completed survey, we did not have access or opportunity to collect such data.

Overall, we have demonstrated that a group of healthcare professionals can maintain a high degree of engagement and satisfaction with a medical e-learning platform, and we have successfully applied the Five Moments of Need in discriminating differing motivations for clinicians to access online learning materials. More detailed, systematic, prospective research is required to refine and expand these initial findings, in order to better elucidate the factors which influence clinicians to seek different kinds of e-learning content, and to prefer different delivery mechanisms depending on the nature and context of their learning needs. We hope for our findings to serve as a basis for the Five Moments of Need framework to be applied in future studies examining clinician learning needs and motivations, in order to better align the goals and approaches of educators with the informational needs of clinicians at the bedside.

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CONFLICT OF INTEREST

The authors have indicated they have no conflicts of interest to disclose.

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