At Your Fingertips:

A Case Study Exploring the Effects of Sharing Digital Video Teaching Tips within a Learning Community of Family Medicine Professionals

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Abstract

Today's medical faculty members are faced with different challenges than their predecessors in teaching tomorrow's physicians. Medical faculty members are now expected not only to be medical content experts, but also expert educators. The majority of the professional development activities available to them, however, are still focused on biomedical knowledge or the improvement of clinical practices. This article explores a faculty development project at the University of Ottawa's Department of Family Medicine (DFM) aimed at improving teaching skills through the online sharing of video teaching tips created by DFM faculty members. Guided by the W(e)Learn Framework, a validated theoretical framework for the design and evaluation of online learning resources, a mixed-methods case study was designed and executed to investigate the impact of this faculty development project on the medical educator learning community. Data from the survey (N=33) and interviews (N=10) were analysed and relevant themes were identified and discussed in the context of the literature. Survey participants responded positively towards the project, finding the tips to be useful, enjoyable, and to have the potential to stimulate knowledge sharing between colleagues and within a learning community. Interview participants corroborated the survey results and additionally reported positive aspects to their colleagues being tip presenters; to the videos being concise; and to the tip videos being accessible anywhere and at any time via the Internet. Issues and concerns with organizational integration and support, as well as with integration into a curriculum were also reported by interview participants. Recommendations were then provided for improving the project as well as suggestions to support the development of similar online professional development resources based on the study findings. Finally, future directions for related research were suggested and other areas of research interest were identified.

Table of Contents

Introduction

Today's medical faculty members are faced with "different challenges than their predecessors in teaching tomorrow's physicians" (Ruiz, Mintzer, & Leipzig, 2006, p. 207). These challenges include decreased time for teaching, new academic responsibilities, increased curriculum content due to emerging medical fields, new learning models, and new curriculum designs (Ruiz et al., 2006). Faculty and professional development programs are essential to providing medical faculty members with the necessary learning opportunities to acquire or develop new skills to fulfill their new responsibilities (Wilkerson & Irby, 1998). Indeed, in Canada, the expectation is that medical professionals participate in such development activities, called continuing medical education (CME), on an annual basis (Wutoh, Boren, & Balas, 2004).

One of the major challenges facing medical faculty members is that they are no longer expected to be solely medical content experts but also educational experts (Wilkerson & Irby, 1998). The majority of professional development currently being offered to them, however, focuses on medical content, for example the building of biomedical knowledge or the improvement of clinical practices (Wutoh et al., 2004), instead of educational skills. Further, existing professional development activities may not be taking into consideration the emerging realities of ever-busier faculty members who have less time available for professional development, and may be subject to either physical or practical constraints (Ruiz et al., 2006). While considerable time and resources have been devoted to research into new medical pedagogies, both at the undergraduate and post-graduate level, and biomedical content-based professional development, there is a notable gap in existing literature on

development opportunities that focus on the teaching of medical education skills (i.e. faculty development).

After a study on current medical educators' professional development experiences, Steinert (2012) concluded that "it would seem worthwhile to take a more careful look at the 'lived experience' of being a medical educator and to use this experience as a framework for faculty development" (p. 76). Steinert (2012) suggested focusing on the medical educator's professional community and the medical educator's relationships with his or her peers within that community. This aligns with the existing body of research on knowledge creation practices of medical professionals that demonstrate a physician's clear willingness and preference for using his or her colleagues as sources of information (Connelly, Rich, Curley, & Kelly, 1990; Dorsch, 2000; Kosteniuk, Morgan, & D'Arcy, 2013; MacDonald et al., 2013b; McGettigan, Golden, Fryer, Chan, & Feely, 2001; Oshikoya, Oreagba, & Adeyemi, 2011; Williamson, German, Weiss, Skinner, & Bowes, 1989).

Similarly, in a needs analysis with rural members in the Department of Family Medicine at the University of Ottawa (DFM), preceptors also reported they learn best from one another (MacDonald et al., 2013b). Literature supported this finding, with consultation of one's colleagues being the preferred method of obtaining new information for many medical professionals (Kosteniuk et al., 2010; Oshikoya et al., 2011). In response to this finding, a faculty development project titled Teaching Tips at Your Fingertips was designed and delivered to help facilitate preceptors learning from one another.

The Teaching Tips at Your Fingertips Project

The Teaching Tips at Your Fingertips project used the preceptors' expressed preferences to learn from peers to facilitate the sharing of teaching best practices and to facilitate a collaborative learning community among faculty members. With a focus on the delivery of highly relevant, as well as brief (1- to 3-minute), videos, the structure of the Teaching Tips acknowledged that preceptors are extremely busy and aimed to accommodate their schedules by being accessible at any time and in any place via an Internet-connected mobile device or computer.

The study described in this article took place over the course of the Teaching Tips pilot run; one or two teaching tips per month were distributed to preceptors by the DFM via an e-mail newsletter from April 2014 to January 2015, with a total of 9 tip videos being released. The purpose of this mixed-methods study was to explore the effects of the Teaching Tips at Your Fingertips project on teaching practices within the DFM community. This study examined the preceptor response to the Teaching Tips project and what effects the Teaching Tips project had on teaching practices and their learning community. Practical and theoretical suggestions are made to improve online learning resources and guide further research.

Literature Review

Faculty Development

The need for continuing and ongoing development for faculty members at post-secondary institutions is well-documented in the literature, often appearing under the labels of faculty renewal, faculty development or professional development (Centra, 1978; Gaff,

1975; Schuster, Wheeler, & associates, 1990; Simpson & Jackson, 1990; Steinert et al., 2006). Faculty development (Camblin & Steger, 2000; Steinert, 2012) encompasses practices that are intended to improve faculty members both personally and professionally (Camblin & Steger, 2000).

Faculty development remains at the forefront of medical education research in large part because the responsibilities of medical professionals and medical school faculty members continue to increase and diversify. Medical faculty members are now expected to be more than medical content experts (Wilkerson & Irby, 1998); there is an expectation for them to provide quality teaching and learning experiences (McLean, Cilliers, & Van Wyk, 2008). Faculty development, therefore, is "recognized […] as an essential support framework provided to faculty members to assist them in responding to the challenges of their multiple roles and evolving expertise" (Leslie, Baker, Egan-Lee, Esdaile, & Reeves, 2013, p. 1).

With the shift in attitude towards recognizing the necessity of faculty development and educational training for medical educators, it stands to reason that we cannot expect educator excellence without formal and effective training experiences. Professional development for faculty members was traditionally typified as "developing expertise in their discipline" (Gaff & Simpson, 1994, p. 168); now, in addition to improving content expertise, faculty development is also expected to improve teaching effectiveness (Steinert et al., 2006). Through a meta-analysis, Steinert et al. (2006) identified key characteristics of effective faculty development practices. Those mostly fell in line with what the literature historically (e.g., Centra, 1978) identified as practices with high faculty involvement: use of augmented feedback, interactive workshops, use or presence of collegial peers and mentors, adherence to adult learning (e.g., Knowles, 1973) principles.

As the literature on medical education grows and more time and resources are spent on faculty development, new problems emerge. As early as 1989, a large plurality of practitioners felt that the "volume of medical literature [had] become unmanageable" (Williamson, German, Weiss, Skinner, and Bowes, p. 158) and that this negatively impacted their ability to obtain necessary and useful information. Now, with the reality of many medical professionals participating in some way in the medical education process, the expectation of keeping abreast of discipline or specialty specific developments is extended to include educational developments.

Communities of Practice

Formal faculty development programs are but one way that a faculty member may grow and learn as a medical professional or medical educator. As early as the pre-clerkship years of their medical education, medical professionals are exposed to and immersed in various "communities of practice (COP)" (Lave & Wenger, 1991; Wenger, 2009; Wenger & Snyder, 2000; Wenger, McDermott, & Snyder, 2002). Such communities are typified by their informal nature, the free-flow of ideas, as well as the various levels of participation by their members. These communities are usually formed of members of the profession, and are stimulated by the presence of problems that are common, recurring or endemic to a specific profession. As such, they tend to grow organically and resist imposed rigidity or codification by a central authority, because, as Wenger et al. (2002) note, such authority's "power is mediated by the community's own pursuit of its interest" (p. 14).

Much of a physician's learning and continued development happens through his or her colleagues. Williamson (1989), for example, found that to help themselves navigate the glut of information that exists and is expected to be known, practitioners preferred to "seek

needed information from ‘human’ sources, such as colleagues, rather than ‘paper’ sources, such as medical literature” (p. 158). Internationally, other researchers have similarly found a preference for colleagues as information sources (Connelly et al., 1990; Dorsch, 2001; Oshikoya et al., 2011); in Canada, this also holds true (MacDonald et al., 2013b; Oshikoya et al., 2011). McGettigan et al. (2001) found that the “sources of information of greatest practical importance are those based on the richest communication medium, personal contact, operating within a defined social system” (p. 188).

The preference of physicians to interact with their colleagues to build and gather new information translates to the ongoing presence of communities of practicing medical professionals as a means of continuing education and solving problems of practice. Physicians “naturally form [COPs]” where “membership, determined by peers, is dependent on each clinician’s reputation and ability to contribute to the collective pool of evidence-based knowledge […] as well as tacit knowledge and practical wisdom derived from practice experience” (Parboosingh, 2002, p. 231).

Leveraging structures such as COP occurs in faculty and professional development in one form or another, including through mentorship practices (Centra, 1978) or through workshops (Centra, 1978; Steinert et al., 2006). Studies have been designed (e.g. Morzinski, Simpson, Bower, & Diehr, 1994) to evaluate the effectiveness of such practice. The importance of other practitioners to a medical professional’s continued growth and education cannot be understated. Sargeant, Curran, Allen, Jarvis-Selinger, and Ho (2006) concluded from their study that one must seek to “facilitate learning through interaction (eg [sic], encouraging learning from each other and deeper thought in response to questions)” for effective faculty and professional development. Exploring a medical educator’s interactions

with his or her colleagues, such as his or her peers, co-workers, professional community, and/or community/ies of practice, in the context of learning teaching skills, is key to the support and improvement of faculty development for these educators.

The Need for Convenience and Accessibility

Traditional formal professional development activities, such as day-long conferences, are often seen as ineffective drivers of change (Davis, Thomson, Oxman, & Haynes, 1995), as well as potentially costly for physicians (Zhang & Nunamaker, 2003), and inconvenient to attend for physicians with daily obligations (Zhang & Nunamaker, 2003; Ruiz et al., 2006). In a meta-analysis of continuing medical education interventions, Davis et al. (1995) write "there is clear evidence that its provision in North America consists mostly of the less effective change strategies." (p. 703) Thus, we must look beyond traditional formal faculty development activity formats, such as conferences and day long workshops, to new formats that acknowledge the learning challenges and realities of physicians today to supplement or complement existing faculty development opportunities.

Of traditional professional development activity formats, Zhang and Nunamaker (2003) note that "face-to-face learning has advantages of being familiar, close, and comfortable for both instructors and students. However, it may necessitate travel and disruption of work, causing time and expense to be prohibitive" (p. 207). As an alternative, the Internet and other communication technologies, via mobile devices and computers, could be used to deliver learning materials to a learner and to facilitate the sharing of information (Govindasamy, 2002; Khan, 2000; Rosenberg, 2001). Asynchronous learning can be used to accommodate physicians whose access to professional development and CME is constrained by their daily clinical obligations (Ruiz et al., 2006). Learning on mobile devices, it would

seem, would offer an alternative method of learning to supplement or complement in-person, face-to-face learning.

Sharples, Taylor, and Vavoula (2005) present the philosophical basis of mobile learning as acknowledging that we "learn across space as we take ideas and learning resources gained in one location and apply or develop them in another [… and] learn across time, by revisiting knowledge that was gained earlier in a different context" (para. 3). Thus, it is the learner that is mobile, "opportunistically appropriating whatever technology is ready to hand as they move between settings" (Sharples et al., 2005), and it is faculty development materials that should be tailored to take advantage of what this new paradigm has to offer.

Traxler (2009) provides a detailed overview of general mobile learning concepts, noting that mobile learning "allows … students to exploit small amounts of time and space for learning, to work with other students on projects and discussions, and to maximize contact and support from tutors" (p. 18). Orwat, Graefe, and Faulwasser's (2008) review of the literature examined mobile device usage specifically in the context of health care, noting that most of the systems (57%) are designed to be mobile, i.e. not limited to clinical/on-site usage and that physicians also accounted for 54% of the targeted users in the reviewed studies. A willingness to adopt mobile technologies for practice by physicians is a promising indication that mobile learning will be embraced by physicians. In a health care education context, mobile learning provides the opportunity to provide "just-in-time content" (Vyas et al., 2010, p. 215) to "[maximize] learners' experience" (p. 215). Young et al. (2011), found that while in some cases physicians prefer traditional CME experiences, they recognized that "there is a role for eCME (electronic CME) for practitioners in locations where traditional formats … might not be possible due to remoteness of service or personal responsibilities"

(pp. 243-244) . Control over how a given resource or material could be used, for example ease of navigation or direct access to relevant material, and where, for example at a computer or on a portable device, it could be used were reported by participants to affect their attitudes towards non-traditional professional development materials (Young et al., 2011).

Digital Video

There is a wealth of literature on the use of video as a pedagogical tool. Schwartz and Hartman (2007) introduced a framework that describes so-called designed video, or video whose content and features are purposefully considered and made. Their framework, "A space of learning for the use of designed video" (p. 7), establishes four broad categories of outcomes—seeing, engaging, doing, saying—as well as their related assessment forms, learning goals, and video genres.

Seeing. The outcome category of seeing is a continuum between familiarity, that is, introducing learners to "phenomena they are unlikely to have seen" (p. 7), and discernment, or the perception of "details they might otherwise overlook" (p. 8). For example, Weber, Hincke, Patasi, Jalali, and Wiper-Bergeron (2012) found that medical students felt video demonstrations of anatomy dissections were "valuable … [and] were a novel, visual way to study … outside the lab" (p. 19). The videos in this case have both familiarity outcomes, e.g. students are introduced to a specimen they have not yet studied, and discernment outcomes, e.g. students are able to review in detail small structures within a specimen that they might have missed otherwise. Additionally, in contrast to the dominant text-based modality of learning materials such as case studies (Bridges, 1992), video offers students a chance to recognize "salient visual, auditory, and nonverbal cues" (p. 110) and be better prepared to

use a variety of modalities to problem-solve. Examples of seeing genres include point-of-view, portrayal, and highlighting videos.

Engaging. The outcome category of engaging is concerned with the engagement of the learner, that is, the "pull that brings people to a situation or topic and keeps them involved [and] … creates the mental context that prepares people to learn" (p. 9). The importance of engagement cannot be overlooked, and courses, for example, that are not found to be engaging by students suffer from elevated rates of both withdrawals and failures to complete (Zhang, Zhou, Briggs, & Nunamaker, 2006). Wieling and Hofman (2010) tie an increase in learner engagement to an increase in effectiveness. Video can also serve to provide context for learning materials in an information-rich, realistic manner (Kumar, 2010), encouraging the "active construction of knowledge by learners" (p. 14). Examples of engaging genres include ads, trailers, narratives, and anchor videos.

Doing. The outcome category of doing is involved with either effecting a change in learner attitude or supporting the learner's development of a skill. This takes the form of behavioural modeling, or having the learner learn by "imitating behaviors shown in a video" (Schwartz & Hartman, 2007, p. 12). Examples of doing genres include modeling behavior presented in a scenario, identification, demonstrations of processes and step-by-step instructional videos.

Saying. The outcome category of saying is made of the learning of facts and explanations, which "provide the 'why' and 'how'" and serve to "tie the facts together" (Schwartz & Hartman, 2007, p. 15). Spiro, Collins, and Ramachandran (2007) note that video clips have the benefit of being memorable and that once a clip has been viewed, only a few times, the learner becomes "quite familiar with the particular of that event. Once a

learner has made that investment … no more than a few seconds of it needs to be seen in order to be reminded of the rest" (p. 8).

Considering the Teaching Tips at Your Fingertips project in the context of Schwartz and Hartman's (2007) categories helps us to understand and appreciate the pedagogical value of the choice of videos, as opposed to another medium, as well as guides our understanding of how digital video may be consumed by the learner. It also provides broad categories of expected outcomes for the Teaching Tips videos to explore.

Conceptual Framework

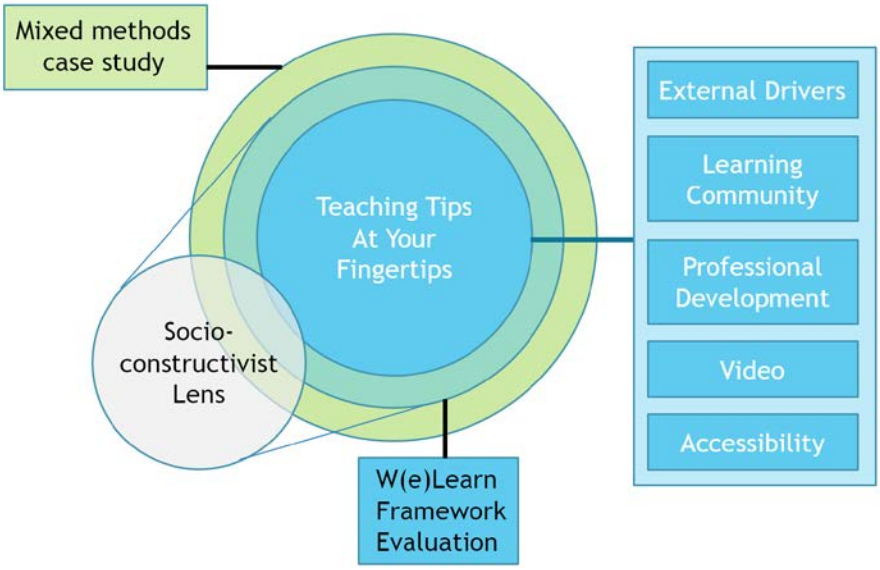

Figure 1. At Your Fingertips study conceptual framework

The framework used to conceptualize the study's variables is depicted in Figure 1. This study was designed as a mixed-methods case study of the Teaching Tips at Your Fingertips faculty development project at the DFM. This study design complemented the study's guiding framework, the W(e)Learn Framework, which is a framework that can be

used to evaluate online learning projects, especially in the health professions. The W(e)Learn framework is grounded in socioconstructivist theory, thus this study considered the design and development of Teaching Tips at Your Fingertips project through a socioconstructivist lens. Preceptors at the DFM exist and learn within a community of their peers/fellow preceptors. It is through this learning community that the Teaching Tips at Your Fingertips project aims to facilitate preceptors' learning from and with one another. Professional development targeting medical education skills in preceptors, is being developed and prioritized as a result of new external pressures for the preceptors, in particular the paradigmatic shift of expectations of what a preceptor should be and should be able to do. Digital video, a medium that has positive results for both engaging learners and learner knowledge retention, is being used as part of the Teaching Tips project to enable preceptors to share their teaching experience via brief teaching tips which are available to their peers through the Internet and can be accessed at any time or place. This engaging, high accessibility, community-based design acknowledged the two realities that (a) physicians are busier now than they were before; and (b) physicians prefer to learn from their peers.

Methodology

The W(e)Learn Framework

Study of the Teaching Tips at Your Fingertips project was guided by the context of the W(e)Learn Framework (MacDonald, Stodel, Thompson & Casimiro, 2009; Casimiro, MacDonald, Thompson, & Stodel, 2009). The W(e)Learn Framework, used for the development and assessment of practical, demand-driven online learning resources within a socioconstructivist paradigm, had previously guided evaluations of other digital video resources (Kellam et al., 2010) and healthcare-related online learning projects (e.g.

MacDonald et al., 2013a; MacDonald et al., 2011; MacDonald, Stodel, Hall, & Weaver, 2009).

Socioconstructivism focuses on the construction of knowledge through human interaction (Kim, 2001), when "individuals are engaged in social activities" (p. 3). Socioconstructivist knowledge and meaning is not only constructed and subjective, but "negotiated socially and historically" (Creswell, 2003, p. 8). Thus, in order to "make sense of (or interpret) the meanings others have about the world", the "specific contexts in which people live and work" (Kim, 2001, p. 9) must be explored. The social nature of sharing teaching tips within the community of medical professionals at the DFM, an integral part of the Teaching Tips project, aligns well with the W(e)Learn framework's socioconstructivist paradigm.

The W(e)Learn Framework consists of five main constructs, *Outcomes*, *Content*, *Media*, *Service*, and *Structure*, each describing a different aspect of an online learning resource. The foundation for the W(e)Learn framework is *Structure*. This includes building an understanding of the learner and their context, the learning community, and pedagogical strategies. Built upon the Framework's *Structure* are the learner's needs and requirements: *Content*, *Media* and *Service*. *Content* should be authentic and reflect the real-world problems and scenarios that can be found in the workplace or classroom (Savery & Duffy, 1996). Using authentic, highly relevant content based on real-world experience epistemologically aligns with the Framework's socioconstructivist nature and is necessary for meaningful learning. *Media*, in this case digital video and the Internet, includes taking into account the technological skill and comfort of the learner, as well as considering how technology affects the pedagogical usability of the *Content*. *Service* includes not only the accessibility of the

Content, but also the technical support available to users, and the organizational support and integration of the learning resource vis-à-vis the user. *Outcomes* considers the effects of the learning resource, such as the motivation to learn, learner satisfaction, the development and application of new skills that can be applied to authentic, real-world contexts, and any attitudinal shift on either a personal or community level.

Research Questions

Data collection for this study was driven by the following main research question and sub-questions:

- "How does the sharing of digital video teaching tips among faculty members in the Department of Family Medicine via mobile devices and computers affect preceptors, their learning community, and their associated teaching practices?"
- Five research sub-questions, exploring specific areas of interest within the main research question, were developed, guided by the W(e)Learn Framework constructs of Structure, Service, Media, Content, and Outcomes:
    1. How do preceptors respond to the Teaching Tips videos? (Content)
    2. Do the preceptors report they learn new teaching ideas as a result of watching the teaching tips videos? (Outcomes)
    3. Do the preceptors report they apply/transfer new ideas as a result of watching the teaching tips videos? (Outcomes)
    4. How does the delivery and accessibility of the Teaching Tips contribute to the adoption and usage of the Teaching Tips by members of the learning community? (Media/Service)

5. What motivates preceptors to contribute as creators to the Teaching Tips project? (Outcomes)

Research Participants

This study focused on the users of the Teaching Tips at Your Fingertips videos, who were preceptors at the Department of Family Medicine; some of the users also were tip creators, contributing, and being recorded in, the Teaching Tips videos. Data for this study was collected through an online survey and semi-structured interviews.

Procedures

A concurrent mixed methods case study data collection strategy (Creswell, 2013) was developed for exploration of the research questions.

Case Study Methodology. Case studies are defined by the "choice of the individual unit of study and the setting of its boundaries" (Flyvbjerg, 2011). Case study is not, therefore, a methodology per se, but instead a "choice of what is to be studied" (Stake, 2000, p. 435). Baxter and Jack (2008), paraphrasing Yin (2003), note that a case study design is appropriate if the study aims to answer a *how* or *why* question; the context is relevant to the study; or boundaries between phenomenon and context are non-existent/difficult to distinguish (Baxter & Jack, 2008).

The focus of the study, *how* the sharing of teaching tips affects a preceptor's learning community, easily satisfies Baxter and Jack's (2008) first rationale. The second and third rationales listed above are also satisfied: taking a socioconstructivist perspective compelled the consideration and understanding of participants' contexts (Creswell, 2013). Individuals' creation of knowledge is based on their interactions with one another; social learning,

therefore, cannot be studied in a vacuum, but instead must include subjective realities and contexts of the participants. A case study research design is not just appropriate for this research study but well-suited.

To use a case study research design, we must (1) determine the case or unit of analysis (i.e. what is included in the case); and (2) bind the case (i.e. determine what is *not* to be included, Baxter & Jack, 2008). The DFM has seven geographic locations and has approximately 500 hundred preceptors, each with varying levels of experience as physicians and as educators. To select the entire DFM as the case unit would have resulted in a case unit with very diffuse boundaries. Instead, the case unit for this study was the Teaching Tips at Your Fingertips project, specifically the experiences of DFM preceptors with the project.

Mixed-methods Research Methodology. Methodologies based on mixed-methods presents a robust way to collect and explore the multiplicity of realities of constructivist inquiry. Although qualitative methodologies are typically employed (Angen, 2000), constructivist inquiry does not necessarily preclude quantitative methodologies (Mackenzie & Knipe, 2006; Viney, 1988). In fact, constructivist inquiry is "likely to rely on […] a combination of both qualitative and quantitative methods" with quantitative data "[being] utilised in a way, [sic] which supports or expands upon qualitative data and effectively deepens the description" (Mackenzie & Knipe, 2006, para. 6). This combination of qualitative and quantitative methodologies has been termed *mixed methods research*; Johnson, Onwuegbuzie, and Turner (2007), provide the following definition of mixed methods research from a review of mixed-methods literature:

> Mixed methods research combines elements of qualitative and quantitative research approaches (e.g., use of qualitative and quantitative viewpoints,

> data collection, analysis, inference techniques) for the broad purposes of breadth and depth of understanding and corroboration. (Johnson et al., 2007, p. 123)

Creswell (2013) introduces general implementations of mixed-methods procedures, termed *sequential*, *concurrent,* and *transformative*. Sequential procedures position the methodologies in series, with the data or results from one informing the design or execution of the other; concurrent procedures position the methodologies in parallel, with collection occurring at the same time, to allow for the "[integration of] the information in the interpretation of the overall results"; transformative procedures involve a "theoretical lens […] as an over-arching perspective" where the lens provides a framework for the design of the study (p. 16). This study's use of a concurrent mixed-methodology allows for sufficient depth and breadth of inquiry desired by the study's socioconstructivist perspective (Mackenzie & Knipe, 2006) and contributes to the validity of the data through corroboration (Jick, 1979; Johnson et al., 2007).

Quantitative methodology. Quantitative data collection consisted of an online survey, available through the Teaching Tips sub-site on the Department of Family Medicine's website. The main purpose of the survey was to evaluate the content of the Teaching Tips project by preceptors in the Department of Family Medicine as well as investigate the Teaching Tips' use as a mechanism for building a learning community. The survey consisted of 7 statements evaluating aspects of the Teaching Tips project that had been developed based on the W(e)Learn Framework and the research questions of this study. These statements primarily involved the W(e)Learn constructs of Content, Media, and Outcomes. Participants indicated, on a 6 point Likert scale, the degree to which they agreed with each

statement, ranging from “Strongly disagree” with a value of 1, to “Strongly agree” with a value of 5. The two middle responses (“Somewhat agree” and “Somewhat disagree”) were both assigned a value of 3. Survey data (N=33) was collected between June 2014 and February 2015, following approval of the study protocol by the Ottawa Health Science Network Research Ethics Board (OHSN-REB).

Qualitative methodology. Qualitative data collection consisted of two components: the first component was an open-ended question soliciting participant feedback about the Teaching Tips project at the end of the online survey (N=25); the second component consisted of audio-recorded semi-structured individual interviews (N=10) with Department of Family Medicine preceptors who had used, were familiar with, or contributed to the Teaching Tips project. The interviews were collected from November 2014 to February 2015 and ranged from 15 to 45 minutes, with an average length of 27 minutes. The survey questions encompassed all five of the main W(e)Learn constructs and elaborated upon some of the statements in the survey instrument.

Data Analysis

Quantitative data analysis consisted of extracting the microdata from the online survey provider and calculating the mean and standard deviations of each statement. Demographic information pertaining to number of years of medical practice and number of years teaching, collected as ranges of years (i.e., 0 to 5 years; 6 to 10 years; 11 to 15 years; 16 to 20 years; and 20 years or more), were assigned a number in the middle of that range to be able to explore statistical analyses (i.e. correlation) of these variables and survey responses.

Qualitative data analysis consisted of transcribing the audio interviews and aggregating the open-ended survey question responses, then examining the semi-structured interview transcripts and open-ended survey question for information that related to the research questions. Conventional content analysis (Hsieh & Shannon, 2005) was the qualitative analysis technique used and data was managed with QDA Miner Lite. Conventional content analysis allows the researcher to gain "direct information from study participants without imposing preconceived categories or theories" (pp. 1279-1280). The data were examined and coded in the form of keywords or short phrases. Using constant comparison methodology (Glaser, 1965), the codes were then organized into themes, and further categorized within the W(e)Learn constructs. The qualitative findings are presented with a combination of paraphrasing and direct quotation of participants where particularly illustrative or interesting.

Findings

The findings from the survey instrument and the semi-structured interview are presented in this section, organized by the most closely corresponding W(e)Learn Framework construct.

Quantitative Findings

Survey participants. Demographic data related to years of medical practice, years of teaching, location, and part-time/full-time status was collected at the start of the survey. Of the 33 survey respondents, 46% had been in medical practice for over 20 years, 24% for 16 to 20 years, and 30% for fewer than 16 years; 30% had over 20 years of teaching experience, 12% had 16 to 20 years, 9% had 11 to 15 years, 27% had 6 to 10 years, 21% had less than 6 years of teaching experience. 52% of survey respondents were full-time academic members

of the Department of Family medicine; 21% were part-time academic members; and 27% provided no response.

Overall. The survey instrument statements focused on three of the W(e)Learn constructs: Media, Content, and Outcomes. Survey results (see Appendix II) were generally positive about the Teaching Tips, ranging from 4.03 to 4.48 (4 = Agree) out of a maximum 5 (Strongly Agree). No correlation was found when attempting to correlate years of experience teaching or years of medical practice with any of the survey statements

Media. The Media aspect of the survey instrument focused on accessibility, i.e. the aspect of the Teaching Tips allowing them to be watched anywhere, at any time, and on any device. Survey participants reported watching the Teaching Tips videos to be convenient (4.45, N=31). They further reported looking forward to receiving and watching additional tips videos (4.48, N=31). These two statements had the highest levels of agreement of all the statements on the survey, as well as the smallest standard deviations.

Content. The Content aspect of the survey instrument focused on the usefulness and enjoyability of the content of the Teaching Tips videos. Participants reported finding watching the videos, on average, to be enjoyable (4.32, N=31). They reported, however, less agreement with the survey statement concerning the usefulness of the videos for the learning of new ideas (4.03, N=32). It should be noted that the statement in question, “I learned new ideas from watching the video”, is directly dependent on participant prior knowledge teaching knowledge and experience. As such, and given the generally high level of self-reported experience of all the survey participants (52% had over 10 years of teaching experience; 79% had over 6 years of teaching experience), it is not surprising that this was

the lowest scoring statement on the survey, as well as the statement with the widest range of responses (SD = 0.90).

Outcomes. The Outcomes aspect of the survey instrument addressed the desired outcomes of the Teaching Tips project: sharing ideas between colleagues, building a learning community, and improving teaching practice. Participants agreed that the videos were both an effective mechanism to share ideas (4.38, N=32) and an effective mechanism to build a learning community (4.19, N=32). They also agreed that they would try to apply what they learned from the videos to their teaching practice (4.16, N=32).

Qualitative Findings

Interview participants. The interview participants consisted of 10 respondents, 7 were users, 3 were contributor-users; 3 were women, 7 were men; 4 of participants were associated with community/rural sites, while 6 were at DFM teaching sites; 9 of the interviews were conducted by phone, and 1 was collected face-to-face.

The findings from the interviews are chronicled in the ensuing sections. The findings are organized under the five main constructs of the W(e)Learn framework: Structure, Service, Media, Content, and Outcomes.

Structure. Preceptor responses with regard to the W(e)Learn construct of Structure fell into three main themes: *Project purpose*, *Target audience,* and *Learning community.* These themes are discussed in the ensuing section.

Purpose. Participants reported not being certain as to the goal of the Teaching Tips project. One thought that "the ultimate intent is to engage people in thinking about teaching" (Participant 7). Another speculated that its existence was to help with "an accreditation

standard … , that you have to provide faculty development to everybody in multiple different formats" (Participant 2). Others hypothesized that the purpose of its existence was to showcase the physician community at the Department of Family Medicine.

Target audience. There was confusion among participants as to whom the Teaching Tips projects was targeting. Many thought that the Teaching Tips would be a useful tool for family medicine residents. Experienced preceptors expressed that they were unsure if the Tips were supposed to be useful to them as well. This confusion, participants reported, was compounded by a divergence in the content of the videos, from educational tips to clinical tips; not something that participants viewed as negative, per se, but something that participants found added difficulty to using the Teaching Tips:

> Not to say that it made it less interesting for me, but it just… It was almost like it was just mislabelled, because I click on something that says teaching tip and I get something that is not a teaching tip. (Participant 8)

Learning community. Participants responded generally positively towards the use of Teaching Tips to stimulate the medical educator community. One participant related how he wasn't formally trained to teach, but that he learned, and continues to learn, teaching skills through his colleagues:

> I didn't learn how to teach. I just learned medicine. You sort of learn by osmosis. You pick up people around you who are good teachers, or are effective at what they do. It's nice for me, … to actually see how others impart messages that I've been trying to impart for a long time. (Participant 10)

Another participant brought up the concept of sharing experiences within the community: "[the Teaching Tips at Your Fingertips project is] a good way of getting people to share their experiences and to put their ideas into words that communicate their ideas effectively" (Participant 3). A different participant mentioned how seeing his colleagues participate within the community encouraged him to similarly participate. He noted, "I respect the information that they're providing and I understand the context; but it would also make me more likely to consider doing having seen a colleague doing it" (Participant 9).

Participants noted the potential of the Teaching Tips project to stimulate and engage with the learning community. Participant 9 noted that he thought the "richest part of the faculty development portion is the discussion with [his] peers." Participant 5 observed, "For me it doesn't do much because I'm about as engaged as you can get, so I don't need any tools to help me get engaged. But what it does is it creates a community of educators." Participant 4 relayed an experience of how the Teaching Tips videos created opportunities for interaction with her colleagues, noting, "[Watching the video] sparked a conversation with him that I likely would not have had, had I not seen the video. So I think that it can promote conversation."

Service. Participant responses with regard to Service fell into three themes: *Organizational integration, Project future,* and *Challenges with access.* These themes are discussed in the ensuing sections.

Organizational integration. The W(e)Learn Framework identifies organizational support and integration as a key component of online learning. In this regard, participants reported much confusion about how the project was to be integrated with existing faculty development resources and who was to be in charge of it. This was expressed in the context

of creating Tips for the project. One participant, who mentioned that she had attempted to communicate with the department about contributing additional Tips, said that it was unclear who at DFM was supposed to be in charge of it and how the process of filming, editing and releasing additional Tips would proceed. Another participant flat out asked, "Who's making the [Teaching Tips] videos?" (Participant 4). This sentiment extended to participants wondering who would end up being in charge of curating any additional Tips for the project.

Project future. Participants expressed concerns about the continued creation of Tips for the Teaching Tips project. "It's easy to come up with things that are tips," said Participant 6, noting that the challenge would be "getting people to do them." Another mentioned uncertainty about how and whether new Tips are presently being created. Participants expressed concern about the life of the project and the uncertainty of whether it would continue or if it would be put on hold or abandoned. Participant 4 noted, for example, that she and her colleagues had thought that there already was "kind of a hold on [the project]." Another was surprised at the apparent lack of activity, mentioning that, when visiting the Teaching Tips website, she left thinking, "Huh, I thought there would be more" (Participant 3). Despite the generally positive comments about the Teaching Tips project from most participants, there was a definite reluctance to wholeheartedly support the Teaching Tips project on the basis that, as one participant expressed, "there is a lot of potential for this to become a backwater" (Participant 6). For one participant, this reluctance or caution was motivated by similar experiences with other technological or web-based projects, such as "a wiki that was intended to be for a teaching community," which "never really got off the ground" (Participant 8).

Challenges with access. Some participants reported having difficulty accessing the Teaching Tips website, Participant 2 noting that the Teaching Tips were "a bit tricky to find. […] You have to go through the [Department of Family Medicine website] to faculty development to the Teaching Tips to find it." Participant 6 similarly noted that there was "a whole lot of clicking" to get to the Tips website. Participant 1 observed, however, that newer and older faculty members navigate the web in different ways, that unlike the older faculty members, "the new faculty do not navigate by click, they navigate by search." This, he said, makes designing projects like the Teaching Tips "a bit of a challenge, because right now, when you're putting things some place, you really need to be able to serve both demographics."

Media. Participant responses with regard to Media fell into five themes: *Use of video, Internet, Notification, Video length,* and *Video quality.* These themes are discussed in the ensuing sections.

Use of video. Participants reported mixed feelings about the use of video as part of the delivery mechanism for the Teaching Tips project. Participants frequently brought up the concept of a personal learning style and reported feeling as though the use of video did not appeal to their learning style. Participant 9 noted,

> Some people like this sort of thing. … I can see its use for some people, but for me, it's not my way of learning educational things, faculty development stuff. … I might allude to the teaching tips [when I'm doing site visits] because for them, it might be useful. I do tell them that it might help them, if that's the way they learn.

Another participant expressed caution about the use of a format with a population as heterogeneous, in terms of age, experience, and comfort level with technology, as DFM:

> [I]f you're talking about a group of physicians, most of whom are between … their late 30s and their early 60s, for the most part. I'm not sure I know the evidence behind how these guys learn. They're men and women, they have different values, different technology abilities -- some people have developed antibodies to anything that starts with 'i'. Other people are totally fully immersed in it. So I don't know. It might be a format that works for people. (Participant 10)

Interestingly, the format of the tips appealed to neither self-described auditory learners, who considered it too visual, nor self-described visual learners, who considered it too auditory. Participant 3 reported, "I think, just the fact that there were no visuals that accompanied it. Just because that's how I learn and so it's hard for me to intake things if it's just someone talking." Participant 6 similarly mentioned, "Because everything is — we all learn in different ways. I like visual stuff, so auditory is less… I prefer comic books [to] War and Peace." Another participant described a preference for a written learning style, noting,

> I find that I learn much better by actually having something in writing. It takes longer, but having some in writing that I can think about and explore the nuances of in my own mind, and see how I would actually utilize it myself makes more sense to me. (Participant 5)

Still, not all interview participants had a negative view of the use of video as part of the delivery mechanism. One participant reported,

> I just enjoy it, the visual part of it. I enjoy seeing my colleagues visually, rather than hearing them, or seeing something in a written form. It brings the whole thing alive to me and because I'm very fond of my colleagues, I … like to see them in person, telling me something. As if they were standing in front of me, talking to me. (Participant 4)

Participant 8 mentioned that despite the lack of what other participants had described as visual elements, the use of video was superior to the use of solely an audio recording. He noted, "It just keeps my interest a bit more, so I am more likely to absorb the information better."

Internet. Participants responded favorably to the Teaching Tips being online and being able to access them from anywhere. Participants highlighted the benefits of using the Internet for delivery, especially for preceptors who are not located at or near DFM teaching sites. Participant 2 noted, "If we can use online resources … that would be fantastic. Especially for all the community people who don't have time to make it into Ottawa, that's great." Participant 4 concurred, saying, "I like the idea of it being so easily accessed on the website for the Department and that it's there in big bold letters." Almost no participants reported being able to watch the Tips video during the course of a normal work day. This was attributed to a lack of free time, given one's clinical or administrative duties as a physician.

Even DFM members who were primarily located at DFM teaching sites found the Teaching Tips videos' availability to be beneficial. As Participant 8 noted, "Being on the Internet is good, I can access it from anywhere I want, I know where it is." Participant 3 highlighted the Teaching Tips videos' advantage over attending in-person faculty

development sessions, most of which are scheduled during the day, nothing that these were often difficult to balance with other responsibilities:

> I can't just step out for two hours and go to a faculty development thing, so the faculty development that I access is usually the faculty of medicine retreats, or sometimes when they have an evening program. So actually these Teaching tips would be very helpful to me in the long run, because I wouldn't need to actually go anywhere to access them.

Notification. Participants provided a considerable amount of feedback about how the Teaching Tips reach them and how they are made aware (or not made aware) of new Tips being released. Participants reported delivery by e-mail as being the preferred method of receiving notifications about new videos. Paradoxically, participants also reported the ineffectiveness of using e-mail; Participant 2 mentioned that "there are all kinds of other things that we just get inundated with," adding that this made it "hard to sort through them all, unfortunately." For many participants, the ineffectiveness of e-mail as a means of communicating was similarly tied to the volume of e-mail that they receive, Participant 4 noting that there is "an overwhelming amount of information that [gets] sent to [them]" by e-mail. In short, when it came to e-mail as a way to market the Tips project, the sentiment was that, as Participant 6 reported, "there's a lot of background noise."

Video Length. Participants uniformly supported the short length of the Teaching Tips. Participants reported they liked the succinct nature of the videos, without lengthy introductions, or extraneous elements, and that they are "short, sweet, and to the point." As one participant observed, "We all have limited attention spans, so you've gotta get your pitch across in elevator time. Nobody has the attention to contemplate things for 10 or 15 minutes"

(Participant 6). Another participant similarly expressed that the length was "just fine. Enough to introduce a topic" (Participant 7). That participant also noted, however, that it was "not long enough to explore [a topic] in depth."

Participants further reported that the short length of the videos made them more likely to watch a video, with one noting that, "Well, they're short enough that it's not a big investment of my time to actually go and check it out" (Participant 5). Another similarly mentioned, "I know that they're quick, and so I could really fit it in anywhere I have 5 minutes of time" (Participant 4).

Video quality. No participant completely dismissed the need for professional product quality of the videos. What differed between participants, however, was the extent to which production quality mattered. Participants reported that generally, a high production quality gave a resource additional credibility. As Participant 3 noted, "I think the more professional they are, unfortunately, no matter what you think about that, the more credible they are to people sometimes." This was especially to Participant 8 in the context of accessing resources that were unknown to him:

> If I'm accessing something that is more unknown to me, like, for example, if I Google teaching tips and I come up with something similar from some other university in the states or whatever, then [the production quality] probably would [matter]. Like, if it doesn't look professional to me, it would affect the credibility, it may be on a subconscious level.

Participant 4 similarly reported, "I think in terms of the wider audience being more professional would probably increase the use of them." For others, however, sufficient

production quality was about meeting a bare minimum standard, usually related to the ease of watching the videos: “As long as the camera isn’t shuddering, and hearing background noises, then it’s probably okay” (Participant 6).

Content. Participant responses within the W(e)Learn facet of Content fell into 4 main categories: *Usefulness*, *Categorization*, *Purpose*, and *Colleagues as presenters*. These are discussed in the following sections.

Usefulness. Most participants reported that the Teaching Tips were useful. Participants tied usefulness to the relevance of the tip content, with Participant 1 saying, “They’re useful. I think the key is to make them relevant to the individual’s practice.” Participant 8 made note of what he perceived to be a range of usefulness, saying “Generally, I find them good and useful; some of them more than others.” Participant 4 reported enjoying the variety of the videos, mentioning specifically that she “liked that it captured so many different areas of my work, from physical exam skills to the larger, higher level stuff.”

Even if they already knew the content being presented in the video, many participants still responded positively:

> I like these quick kind of tips. The one… on examination of newborns, I’ve been doing for years, so I didn’t learn anything new but I thought it was something that would be very good for younger faculty if they had not thought about doing it before. I think it’s a very practical tip, and one that some of us have learned just by experience, but these are all good ideas and all useful. (Participant 4)

Another participant noted that seeing Teaching Tips about something that they already knew or did was validating: “[the Tip] information was something that I already do

so it's nice to see that somebody else did the same thing" (Participant 3). Reponses were not uniformly positive, however, with other participants describing watching Tips whose information they already knew to be "a bit of a time waster, actually." (Participant 5)

Many participants identified the Teaching Tips as something that would likely be more useful for new faculty members and residents. Participant 1 suggested that "one of the things that we should be doing with new faculty is we should provide them with a link so that they can watch through all of the tips."

Categorization. A recurring theme that emerged across many of the interviews was the need for the Teaching Tips videos to be categorized or have a description. Participant 1 emphasized the need for categorization, to be able to quickly determine if a Tip's content is going to be relevant to a learner. Participant 9 noted, "As things go along, that would be something that would be helpful, like, search for keyword or topic. ... To just sort of randomly scroll through videos is a problem, especially as you get more and more." Most participants who mentioned categorization did so in the content of making the Tips searchable, especially if one were to look for the solution to specific teaching challenges or return to review a Tip that they had already seen. Participants noted that while the number of videos is small right now, some form of organizational structure would be necessary if the project were to grow. Participant 6, for example, mentioned, "So say, if in the next four or five years hundred people give tips. Well, are they randomized? Are they miscellaneous? Are they all over the place? Is there any way of compartmentalizing them?"

Purpose. A recurring theme reported by participants was difficulty understanding the purpose of the tips, and therefore how they should be trying to engage with them:

> [I]t has to be tied to a bigger framework. … It's like reading a book of quotes. If there's no actual theme and you're just flipping through a book of quotes, … it doesn't mean anything to you. But when you're in the mode of talking about a theme, and you have a quote that kind of really hits the mark, you feel like that's perfect. (Participant 10)

Others expressed similar desire for the Teaching Tips project or individual Teaching Tips videos to be situated within a known program, framework, or curriculum. This led to the suggestion by one participant of using the Teaching Tips as a gateway to other faculty development programs:

> [I]t's kind of hard to put a value on the delivery and the quality, when the purpose is not really clear. I would say this is a really good first step into a more in-depth faculty development curriculum, depending on what the purpose of it is. (Participant 7)

Colleagues as presenters. Participants reported that the presence of members of the DFM as tip presenters had a positive effect on their willingness to use and view the Teaching Tips. The use of members of their community, they reported, engaged them and added credibility to the content. The engagement was primarily due to feelings of admiration or respect for their colleagues and their work. As one participant reported:

> Everybody that is a teacher here teaches with their own passion, but … [what] I enjoyed was even just a snapshot into what this person values. And even if it was not something that I'm going to take away forever, the reality is that at that point, I know that there was something [for example] about waiting rooms and stuff. … It

> highlights people and shows their passion and getting us a chance to see that passion. (Participant 10)

Similarly, Participant 8 reported, “I know these folks, so if I see anyone that I know, I’m probably more likely to watch…. And, they are people that I respect and value their opinions, so it makes me more likely to watch and listen.” For Participant 9, the benefit of having colleagues as presenters was not just to lend credibility, but also to help contextualize or ground the content of the teaching tips videos:

> One of the things that I liked the best, … is … it's great that they're my colleagues. They're not Joe Blow from somewhere else. Given that I know the people; … that was kind of nice, to have other people who I know and respect doing stuff. … this represents my teaching environment.

Interestingly, Participant 3 mentioned that part of the credibility she affords to the Teaching Tips presenters was due to their status within the learning community. She noted, “I guess most of the peers that I have are not those guys, because I am working in the community. So, I see the folks who are doing the Teaching Tips really as more of the family medicine experts” (Participant 3). Having someone familiar presenting the tips was reported by participants to help them contextualize the information being presented in the video. Participant 2 noted, for example, “I know all the people in there. That’s good. That’s very good. That’s great. If you know the speaker and you know where they’re coming from, that’s great.”

Outcomes. Preceptor responses related to the W(e)Learn construct Outcomes fell into four themes: *Learning*, *Application*, *Community*, and *Reflection on practice*. These are discussed in the ensuing sections.

Learning. Many participants reported finding the Teaching Tips not to be a source of new ideas for their teaching. Participant 1, for example, mentioned that while he found them interesting, he "didn't learn anything tremendously new" to him. Participant 6 similarly noted, "I mean, there are occasionally ideas that are new and novel, but most the time they're things that I've actually tried or have considered. Or used." Participants attributed this to the long length of time they had already spent as educators and their high level of engagement with the learning community.

Application. Some interview participants noted that their teaching practices were affected by the Teaching Tips project. Participant 4 mentioned, "I've used a little bit of almost everything I've seen." Participant 3 similarly reported that while she hadn't had any residents with her to give her the opportunity to apply ideas from the videos, she planned to use it with her current resident, "I'm more likely to use [the information in the Teaching Tip video] now that I have a resident with me this month, so I'm going to try."

Community. Much of the motivation to contribute to the Teaching Tips project, participants reported, was a combination of social pressure and a sense of duty to the community. One of the tip creators noted,

> I was solicited very, very strongly. Persistently. I would say peer pressure [motivated me to contribute]. It wasn't my idea to get in front of the camera and do it. The community, or certain people in it, leaned hard. But I do believe in trying to create a

> community, and I think that if someone spent a long time doing something, I'd like to contribute something back, and … I have learned something in all the years that I've been teaching. (Participant 7)

A potential tip creator mentioned support of the delivery mechanism and the community as being a motivator: "… it's a very interesting delivery vehicle, and if I can help […] to get the process moving by contributing a couple of them, I think that's a good use of my time" (Participant 1). Another creator focused on the aspect of sharing experiences within the community and having a showcase for the variety of their medical and educational practice:

> I really enjoyed them, and I also enjoyed actually filming them myself. I love to share little things that I have learned over the years about how to make teaching better or how to make our work better, and so I think it's a fantastic initiative. I think it's a really cool idea. … One of the things I loved about our community retreat, our faculty retreats, was the sharing of information with each other about the work that we do ourselves. I was amazed at the variety of work that we do, and the different places that we work, the different kinds of patient work that we do, and research, … The Teaching Tips reflected the broad spectrum of work that family doctors do. I like that, … it represents us in an interesting way. (Participant 4)

Participant 10 similarly reinforced the ideas of community, with an added sentiment about working together to solve problems. He noted that mentorship and support among preceptors, especially for teaching skills, was a very common practice within the learning community.

Reflection on practice. One of the tip creators reported that the main benefit of participating in creating a video for the Teaching Tips at Your Fingertips project for him was that it facilitated a reflection on the teaching practice that he shared:

> For me, one of the most useful things about teaching, is that I learn something myself, better. … Going through the process of making a teaching tip made me really distil down to the really core elements what it is I am trying to say, so that I can actually use that message when I am working with people, like my colleagues. (Participant 10)

Discussion

In this section, the main themes from the literature will be revisited. The similarities and contradictions between this study's findings and what is established in the literature will be examined and discussed.

Faculty Development

The challenges, identified within the literature, with the provision of professional development that would fulfil the educational needs of medical faculty members ranged from the format of professional development available to the content of the professional development (Camblin & Steger, 2000; Leslie et al., 2013; Steinert, 2012). For the most part, participants expressed experiencing these same challenges. There appears to be a large body of professional development opportunities for biomedical expertise available to preceptors at the department of family medicine and faculty development of educational skills is forced to compete with those other needs. The findings support the notion that only recently has there been a recognition of the importance of providing training for medical educators, as opposed

to the historical arrangement of “learning by osmosis,” as one participant phrased it. This highlights the importance of developing and supporting programs designed to support medical educators, especially considering the expressed interest, by participants, of engaging in their community of learning and participating in faculty development activities.

The Need for Convenience and Accessibility

The need for convenient access to faculty development was presented in the literature as being in contrast to so-called traditional formats, which may be seen as ineffective (Davis, Thomson, Oxman, & Haynes, 1995) or costly (Zhang & Nunamaker, 2003). In terms of cost, the study findings are consistent with the literature: preceptors reported difficulty making time to attend faculty development activities in person, especially when those activities took place during the day. They reported being unable to spend the time out of clinic to be able to participate. This same sentiment extended to when the participants reported choosing to view the tips: for the most part, outside of working hours; in the evening or on weekends. The study findings are also consistent with the findings of Young et al. (2011) in that preference seems to be split between traditional, face-to-face professional development and online professional development. The main concern reported by participants is a loss of the richness of interaction and of face-to-face communication; these were primarily reported by participants at DFM teaching sites. Conversely, the appeal of non-traditional opportunities to preceptors working in the community was evident: they noted that online faculty development offers them the ability to participate when they otherwise would not be able to.

Similarly, the mobile learning philosophies presented by Sharples et al. (2005) and Traxler (2009) were reflected in this study’s findings. While most participants interviewed all but rejected the use of what are considered, in common parlance, mobile devices (for

example, cell phones or iPads), they espoused the core of mobile learning through their opportunistic uses of device, time, and location to engage in learning through the Teaching Tips. This, coupled with the participants' self-awareness of the heterogeneity of the comfort level with technology within the DFM, suggests that mobile or "just-in-time content" (Vyas et al., 2010, p. 215), should be further pursed within the DFM, especially as the demographic of the preceptor population shifts.

Digital Video

When comparing this study's findings on the use of video for the Teaching Tips to the findings described in other projects (e.g. Kellam et al., 2010; Weber et al., 2012) or with Schwartz and Hartman's (2007) framework, some contrasts arise. This study found, for example, that there was a lot of resistance to the use of video, as it was perceived to not be complementary to many of the participants' learning styles. While some found the use of video to be engaging, as in Weber et al. (2012), most were either neutral or slightly negative towards it. At the same time, this might be because of what this study's participants described as talking-heads videos, that is, videos that are mostly just a person talking to a camera, with little in the way of visual aids. This dislike for the use of video, may also be attributable to the participant demographic of this study and that of the DFM in general: as estimated by one participant, somewhere between late 30s and early 60s, with a wildly varying levels of comfort with technology, and mixed support for online learning. The somewhat simplistic use of video in the Teaching Tips project perhaps failed to leverage the literature's described benefits of video, as described by Kellam et al. (2010), Kumar et al. (2010), or Spiro et al. (2007).

Communities of Practice

Finally, this study explored both physicians learning from each other (Connelly et al., 1990; Dorsch, 2000; Kosteniuk et al., 2013; MacDonald et al., 2013b; McGettigan et al., 2001; Oshikoya et al., 2011) and their learning community, conceptualizing that community as a community of practice (Lave & Wenger, 1991; Wenger, 2009; Wenger & Snyder, 2000; Wenger et al., 2002). The study's findings do show that there is a community of learners that functions in much the same way as a community of practice. These learners have different levels of engagement with the community, and also serve different roles, with some being more established as educators than others. This study's participants reported how important this community was to them, especially since many of them, while they now have many years of teaching, would have started when formalized faculty development was scarce. Participation in creating a Teaching Tip video was conceptualized by many of the participants as being engaged with the learning community and taking an active role to share experience and knowledge. Even the motivation for creating a tip was governed by social pressure of the community as well as a need, as reported by participants, to give back.

The findings of this study also firmly support the notion that physicians rely on each other as sources for information and that they have a preference for learning from each other, especially when it comes to education. Whether that is for notifications of something like when the Teaching Tips are released, to sources for actual clinical or educational knowledge, the interactions between physicians and their sharing of experiences is a key component of the professional and social growth of preceptors at the DFM. While being unsure of the purpose of the Teaching Tips at Your Fingertips project, this study found participants were

overall very supportive of attempts to engage and stimulate their learning community, as well as of the opportunities it gave them to see and interact with their peers.

Conclusions

The purpose of this study was to explore the Teaching Tips at Your Fingertips project at the DFM, specifically examining aspects the effect of the Teaching Tips project on the DFM preceptor learning community and preceptor teaching practices.

Preceptors found the Teaching Tips videos to be engaging and found their content to be useful. They also reported that the Teaching Tips videos were enjoyable; that the videos provided a positive showcase of the community of medical educators at DFM; and that the project encouraged them to share their teaching experience within their community.

Preceptors reported that they learned new teaching ideas as a result of watching the Teaching Tips videos, however the qualitative data presented a more nuanced (and less positive) picture. Still, experienced preceptors, who were already familiar with the information in the videos that they watched, reported that the videos were a positive affirmation of their current practices, both teaching and clinical.

In addition to learning new teaching ideas, preceptors reported a willingness to apply the ideas learned from the Teaching Tips with their residents. For others, while they didn't report directly applying new ideas from the Teaching Tips, they did report that the Teaching Tips project engaged them in thinking about their own teaching and reflecting on ways to improve.

Delivery and accessibility played a crucial role in having the Teaching Tips be watched by preceptors. Many preceptors reported either not having the desire or not having

the time available to watch the Teaching Tips at work. Thus, having them be available anywhere and at any time through the Internet allowed them to be watched, for example, in the evening and at home, when they otherwise would not have been. Preceptors reported liking that the videos were short, to allow them to fit watching them into their busy schedules.

Preceptors also enjoyed the use of video. While not uniformly positive about the use of video for learning purposes, preceptors reported enjoying seeing members of their community, their peers and colleagues, participate in sharing tips, which in turn encouraged them to engage with the project.

Tip creators reported being motivated by the opportunity to engage with their peers and colleagues and to share their experience. Creators framed this as giving back to their community, especially since they acknowledged that much of their teaching skill was developed through interaction with their community. Notably, creation of a Teaching Tips video by one creator was seen as an opportunity not just to contribute to the community, but as an opportunity to improve one's own teaching skills through the reflection afforded by the tip creation process.

This study's findings support the conclusion that the sharing of digital video teaching tips, as exemplified by the Teaching Tips at Your Fingertips project at the DFM, has the potential to make a positive impact on DFM physician teaching skills, as well as the DFM learning community. This study found that participants at the DFM not only enjoyed watching the videos, but found them useful as a credible source of information. The source of this credibility came from the use of members of the DFM teaching community as tip presenters. This provided a way for the information to be contextualized. This finding is

strongly supported in the existing literature on physicians' communities as sources for information. This study's findings also support the use of this project as a way to stimulate the DFM's community of medical educators and engage them in considering their teaching skills and practice. This was reported not just to be an outcome of watching a Teaching Tips video, but also as part of the process of creating a Teaching Tips video.

This study found that certain reservations about the use of technology do exist, especially within an exceptionally heterogeneous population such as this. Online and mobile learning was met with skepticism by participants, with many declaring that it did not fit their learning style. This was true too for the use of digital video, though that is likely to be more related to the actual implementation of video in this specific context. Still, this study did find that making this faculty development resource available anywhere, at any time, and on any device, was strongly appreciated, especially by those with reduced access to traditional resources and faculty development. This allowed those physicians, usually ones who were geographically distant or had extensive clinical duties, to participate in improving their teaching skills when they otherwise might not have been able.

Recommendations and Further Research

There are numerous practical recommendations that can aid in improving the Teaching Tips at Your Fingertips project specifically, and other peer- or community-based online learning resources generally, as a result of this study. They include:

- Focus on using members from within the learning community, especially ones that are perceived to be experts and who are well respected

- Use community leaders and role models as a way to encourage participation within the community
- Be clear about the purpose and objectives of a faculty development project
- Be explicit about the intended target audience of a project and be aware of their skill level
- Keep the length of videos short
- Situate or contextualize faculty development initiatives within an existing faculty development curriculum
- Add categorization and searchability to help users more quickly determine relevance when first viewing, and find what they are looking for upon returning
- Consult with tip creators at various steps in the video production so that they maintain ownership
- Include more visual aids and dynamic interactions with videos to improve engagement and enjoyment
- Encourage or facilitate face-to-face interactions or additional private communication within the community after a video
- Make organizational support for faculty development projects predictable and clear
- Professional production quality matters to an extent, but be careful about the overhead it may add
- Be mindful of the technological comfort level of a given demographic when designing technology-based or technology-supported projects

Similarly, there are a number of theoretical implications that can serve to guide future exploration into the use of technology within the context of accessible faculty development as a result of this study. They include:

- Further research specifically targeting new or inexperienced preceptors
- Further research into the mentorship aspects of a physician's educational community of practice
- Further research into the motivators behind engagement in a medical educator's community
- Research into the overlap and interaction of a medical practitioner's clinical community of practice and educational community of practice
- Further identification of demographic issues that may exist when designing and implementing technology-based or technology-dependent learning resources
- Development of an assessment tool to investigate knowledge transfer and knowledge construction through the use of digital videos for the purpose of the development of educational skills
- Further research into the concept and effects of being proud of one's work and learning community, especially for medical professionals

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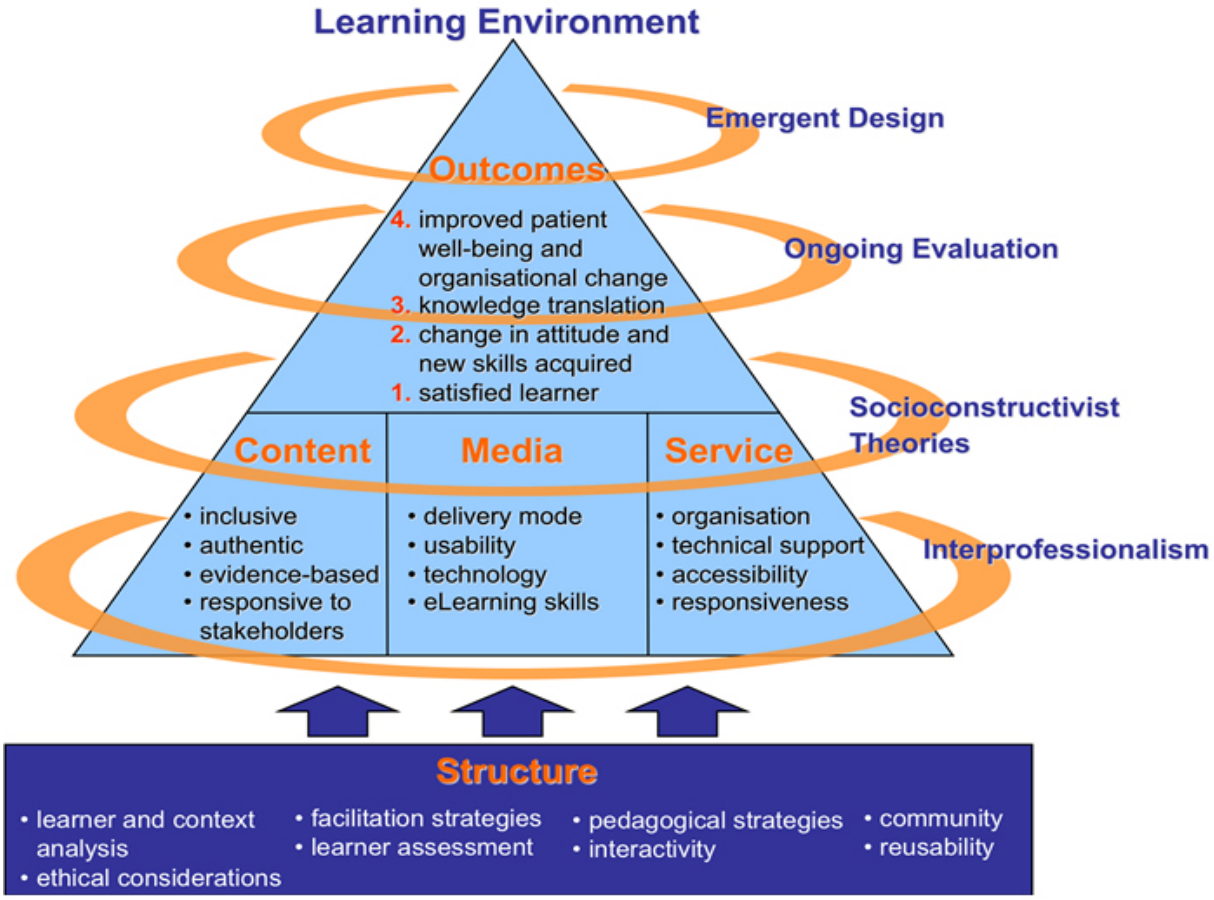
Appendices

Appendix I. The W(e)Learn Framework (MacDonald, Stodel, Thompson, & Casimiro, 2009)



Appendix II. Online Survey Response Data

Statement	**Mean score (Max – 5, Min – 1)**	**SD**
"I enjoyed the video."	4.32 (N=31)	0.60
"I learned new ideas from watching the video."	4.03 (N=32)	0.90
"I will try to apply what I learned from the video in my teaching practice."	4.16 (N=32)	0.77
"This video is an effective mechanism to share ideas between colleagues."	4.38 (N=32)	0.71
"This video is an effective mechanism to build a learning community."	4.19 (N=32)	0.78
"I found watching the video to be convenient."	4.45 (N=31)	0.51
"I look forward to receiving and watching other Teaching Tips videos."	4.48 (N=31)	0.57