RESEARCH

An Interprofessional Web-Based Resource for Health Professions Preceptors

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Objective. To develop a Web-based preceptor education resource for healthcare professionals and evaluate its usefulness.

Methods. Using an open source platform, 8 online modules called "E-tips for Practice Education" (E-tips) were developed that focused on topics identified relevant across healthcare disciplines. A cross-sectional survey design was used to evaluate the online resource. Ninety preceptors from 10 health disciplines affiliated with the University of British Columbia evaluated the E-tips.

Results. The modules were well received by preceptors, with all participants indicating that they would recommend these modules to their colleagues, over 80% indicating the modules were very to extremely applicable, and over 60% indicating that E-tips had increased their confidence in their ability to teach.

Conclusion. Participants reported E-tips to be highly applicable to their teaching role as preceptors. Given their multidisciplinary focus, these modules address a shared language and ideas about clinical teaching among those working in multi-disciplinary settings.

Keywords: preceptor education, clinical teaching, professional development, interprofessional

INTRODUCTION

A cornerstone of professional education in health care is student training, which involves practice education and fieldwork components. Within these settings, students learn to apply knowledge acquired in postsecondary institutions to the workplace to improve patient outcomes. In these practice experiences, students learn best when they are guided by skilled professionals whose teaching abilities allow them to tailor learning experiences to meet student needs.^{1,2} Regardless of healthcare discipline, a common set of themes exists that is fundamental to quality clinical teaching.³ However, these teaching fundamentals are not routinely covered in health professional education programs.⁴ While professionals develop the knowledge and skills necessary for their specific disciplines, they often have limited opportunities to learn how best to share their knowledge and skills with students.

Postsecondary healthcare institutions use a variety of educational approaches to help prepare preceptors, clinical teachers, and practice educators (herein referred to as preceptors), but busy caseloads, scarce continuing education time, and inadequate financial resources limit these educational opportunities.⁵

To be most effective, preceptor education programs need to be readily accessible to all preceptors irrespective of geographical setting, be asynchronous and time-insensitive to preceptors' individual schedules, address topics of primary importance to preceptors, be engaging, make use of recognized pedagogical techniques, and not be excessively demanding of preceptors' time.⁶

With most health care professionals having access to the Internet, Web-based platforms are ideal for delivering effective and accessible preceptor education content. Anecdotal discussions with health professional preceptors affiliated with the University of British Columbia, Canada, supported the development of such an online resource.

To confirm the need for such a Web-based resource and to identify appropriate content and format, funding for a two-phase study was secured from the British

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Columbia Ministries of Health and Education under the auspices of the British Columbia Academic Health Council to research, develop, and evaluate a series of online teaching modules. An earlier phase consisted of an environmental scan of existing Web-based resources and a needs assessment survey of over 500 health professions preceptors from 10 different health disciplines in the province of British Columbia to determine their learning needs. Findings from that scan have been published elsewhere.³ Briefly, it corroborated that there was strong interest among preceptors from numerous disciplines to use Web-based resources as an aid to acquiring knowledge and skills related to practice education teaching. Its needs assessment component identified content of greatest relevance to preceptors and clarified preferred formats for delivering such learning. Further, the environmental scan confirmed the need to develop a new Web-based resource because no current Web-based resources existed to address such learning needs. Informed by the results of the needs assessment and environmental scan, this pilot study then focused on the development of a new Web-based resource that could be responsive to learning needs of preceptors from a variety of health professions backgrounds.

The goal of the pilot study was to develop a series of Web-based preceptor teaching modules called *E-tips for Practice Education* (E-tips) for health care professionals in British Columbia. The objectives of the study were to (1) describe the development of E-tips modules, and (2) present results of a pilot study evaluating the usefulness of these modules to preceptors representing a range of different health professions.

METHODS

The pilot study was conducted between July 2007 and March 2008, and consisted of 2 parts: (1) developing the online resource, and (2) evaluating it to investigate whether it met preceptors' expectations of content, applicability, and accessibility. Resource development occurred over 8 months and included an interprofessional team of health care educators from the University of British Columbia, health practitioners in the community, a software development expert, and a project manager. A cross-sectional study design was used to evaluate the online resource. Approval for the project was obtained from the University of British Columbia's Behavioral and Research Ethics Board.

Based on the earlier environmental scan, the development team established the following general criteria to guide the content development of the E-tips modules. Each module was to be: relevant - covering topics of importance to preceptors from participating health professions; well-founded - including content well supported in

the clinical and adult education literature; engaging - making use of interactive activities and video examples to ensure that learning was active rather than passive; accessible - available at any time and in any sequence with few or no barriers (eg, login, registration) to impede access; and brief - modules that would take no more than 15 to 30 minutes to complete. Educational topics that had been identified as "very interesting" in the needs assessment survey and those determined to be relevant by the multidisciplinary study team were grouped into 8 major themes: (1) preparing for the student learning experience, (2) principles of adult learning, (3) teaching skills, (4) clinical reasoning, (5) giving feedback, (6) evaluation of student performance, (7) the failing or struggling student, and (8) conflict resolution.³ A literature search was then completed for each of the 8 themes to develop content that was relevant.

E-tips modules were created using Moodle (Modular Object-Oriented Dynamic Learning Environment, Moodle Pty Ltd., Perth, Western Australia). In addition to free access, Moodle offers advantages for creating course content using various innovative tools that interface with the Moodle platform, such as standard html, Adobe Flash (Adobe Systems Incorporated, San Jose, CA), JavaScript (Oracle Corporation, Redwood Shores, CA), MySQL (Oracle Corporation, Redwood Shores, CA), and Apache Webserver (The Apache Software Foundation, Forest Hill, MD), thereby creating a student-centered learning environment where learners are able to learn independently to strengthen their understanding of concepts and processes, to engage in self-reflection, and to participate in interactive, hands-on activities.⁷ The design of the modules was guided by the following principles: easy and fluid navigation; no item more than 3 clicks away; all navigation items clearly defined; clear and comprehensive directions for using the site, including navigation, flash objects, and videos; and all modules short and images small to ensure faster loading times for users with low-bandwidth connections. Users could access the resource through guest access or create their own personal logins. Graphics were purchased through royalty-free Web sites and modified as required. The URLs and server space to house the course were also purchased, and links to the course were added to Web sites acting as preceptor education hubs, such as the Continuing Internet-based Education Program (www.preceptoreducation.com) and British Columbia's Academic Health Council's Practice Education site (www.practiceeducation.org). An external Web consultant was hired on an as-needed basis to maintain and troubleshoot any technical issues.

Prior to launching the online course, 8 University of British Columbia clinical faculty members from audiology,

speech-language pathology, medicine, social work, pharmacy, occupational therapy, physical therapy, and nursing were invited to beta test the modules. Participants were asked to provide the developers with feedback regarding the ease of use of the modules and the look and feel of the overall program, and to identify any significant gaps or errors in the content. All identified navigation problems, typographical, and grammatical errors were corrected prior to pilot testing E-tips.

Both purposive and snowball sampling techniques were used to recruit participants for the pilot study. Preceptors from 10 health and human resource programs at the University of British Columbia were asked to invite their respective preceptors within British Columbia to participate in the study. The professions represented were nursing, pharmacy, social work, audiology, speech-language pathology, occupational therapy, and physical therapy.

Using an online questionnaire, participants were asked to evaluate each of the 8 modules as they were completed and to evaluate the overall E-tips course once all 8 modules were finished. For each of the 8 modules, the questionnaire asked preceptors to: (1) assess the applicability of the module to their role as a preceptor on a 5-point scale (extremely applicable, very applicable, moderately applicable, slightly applicable, not applicable); and (2) comment on the length of the module using a 3-point scale (too long, just right, too short). Additionally, using open-ended questions, preceptors were asked to comment on each module regarding new knowledge and skills learned about being a preceptor, the least useful components of the module, and one or 2 ways they anticipate this learning would change their teaching in the future. For the overall program, preceptors were asked to rate: (1) the applicability of E-tips course on a 5-point scale (extremely applicable, very applicable, moderately applicable, slightly applicable, not applicable); (2) the extent to which the E-tips course had increased their confidence on a 5-point scale (much more than expected, more than I expected, exactly what I expected, less than what I expected, much less than expected); (3) indicate (yes/no) if they would recommend the E-tips course to others; and (4) indicate (yes/no) if the various features of E-tips were user-friendly (navigating within and across modules, accessing links and videos, readability and font size of text, and screen colors).

Questionnaire data were downloaded to an Excel spreadsheet, allowing for efficient collation and summarization of the survey results. Word scales were converted to numerical values and a series of analyses were carried out using SPSS 15.0 for Windows (SPSS Inc., Chicago, IL): descriptive statistics on the sample characteristics and questionnaire items were computed using frequencies, means, and standard deviations; comparisons

for nominal data using chi-square; while correlations determined associations between variables. For inferential and correlation tests, a priori significance levels were set at $p < 0.05$. Qualitative responses to open-ended questions were grouped under common themes and analyzed.

RESULTS

Eight modules were developed containing key learning components for each topic as summarized in Table 1. Each module followed a consistent format beginning with module objectives and concluding with a “That’s a Wrap” summary screen. Other metaphors of film and acting that reflected the various roles that preceptors adopt in the process of clinical teaching were used throughout the modules. (Interested readers can log in as guests at: <http://www.preceptoreducation.ca>.) The modules incorporated a variety of teaching strategies to engage users and to underline important concepts, including self-reflection exercises, quizzes to review important concepts, self-assessments, quick tips, and flash cards as learning strategies to allow users to review important information. In keeping with the metaphor of film and acting, the modules included video examples (linked to YouTube URLs) from popular movies and television shows to bring particular points to life. Ninety preceptors completed 1 or more evaluations of 1 or more modules in the pilot study, and 67 (74.4%) completed evaluations for all 8 modules. Demographics of the participants appear in Table 2.

Preceptors’ evaluations of the applicability and the appropriateness of the length of the modules appear in Table 3 and Table 4, respectively. More than 80% of the participants rated each of the 8 modules as “very applicable” or “extremely applicable.” Four of the 8 modules: “Setting the Stage for Clinical Teaching,” “The Role Learning Plays in the Practice Learning Experience,” “Enhancing Your Teaching Skills,” and “The Evaluation Process in Clinical Education” received the highest endorsements with over 95% of respondents rating these modules as “very applicable” or “extremely applicable.” In their qualitative feedback, preceptors noted acquiring new knowledge and skills in several areas, corroborating the findings from the quantitative analysis. The 3 areas most commonly cited were feedback, evaluation, and conflict resolution. Many preceptors said that after watching the modules they better understood the differences between providing regular feedback and conducting periodic evaluation; they understood the importance of providing specific and concise written evaluations to students about their progress and areas needing improvement; and they appreciated that their role and responsibilities needed to change as students moved through the learning process,

Table 1. *E-tips* Modules and Content

Module	Module Description	Examples of Content
1. Setting the Stage for Clinical Teaching	Includes tips for how to prepare oneself and one's facility for a student's arrival and to help orient the student on the first day	<ul style="list-style-type: none"> ● Preparing for students before they arrive ● Welcoming/ orienting students ● Assessing students' learning needs ● What students say they want to know
2. The Role Learning Plays in the Practice Education Experience	Reviews information on learning styles, the Learning Cycle, strategies to enhance learning and principles of adult learning	<ul style="list-style-type: none"> ● Four principles of adult learning ● Applying adult principles ● Learning styles - preferences ● Adapting to different learning styles ● Applying the Learning Cycle in learning
3. Enhancing Your Teaching Skills	Provides ideas to foster effective teaching skills in novice preceptors and to enhance skills in more experienced teachers.	<ul style="list-style-type: none"> ● Characteristics of effective teaching ● Teaching roles for different situations ● Techniques for effective teaching ● The one minute preceptor ● Effective questioning ● Teachable moments and story telling
4. Fostering Clinical Reasoning	Addresses strategies on how to facilitate decision-making and clinical reasoning	<ul style="list-style-type: none"> ● Defining clinical reasoning ● Fostering clinical reasoning ● Defining self-reflection ● Benefits of self-reflection
5. Giving Feedback	Discusses the role of feedback in practice education, tips on giving effective feedback and the benefits of doing so, and ways to incorporate feedback into clinical teaching	<ul style="list-style-type: none"> ● Elements of effective feedback ● Outcomes of (in)effective feedback ● Involving the student in feedback ● What do students want to know
6. The Evaluation Process in Practice Education	Outlines the purpose of evaluation, steps to make the evaluation process run smoothly, and tips on problem-solving challenging situations	<ul style="list-style-type: none"> ● Evaluation versus Feedback ● Pitfalls of evaluation ● Effective versus ineffective evaluations ● Students' perspectives ● Alleviating students' anxiety
7. Supporting the Struggling Student	Covers factors that might contribute to a student's difficulties – real or perceived – as well as intervention strategies to address these issues	<ul style="list-style-type: none"> ● What constitutes a struggling student ● Understanding the nature of the problem ● Steps to support the student ● Gather your data ● Intervention options
8. Strategies for Resolving Conflicts	Provides tools for identifying sources of conflict and ways to manage conflict in the practice setting	<ul style="list-style-type: none"> ● Defining conflict ● Sources of conflict ● Differences in communication styles and expectations ● Perceived roles and responsibilities

in order to adequately support them as they evolved and matured during the experiential training process. Several preceptors also mentioned that the modules provided helpful tips and strategies to deal with conflict. When asked about the length of the modules, more than 80% of the participants indicated that the length of 7 of the 8 modules

was “just right.” “Enhancing Your Teaching Skills” was the only module rated “too long” by about a quarter of the preceptors.

Overall ratings of E-tips by participants who completed all 8 modules and responded to the end-of-series survey questions were equally favorable. All respondents

Table 2. Demographic Characteristics of Participants Who Engaged in the Pilot Study

Characteristics	No. (%)
Number of participants who completed all 8 modules	67 (74.4)
Number of additional participants completing some of the modules	23 (25.6)
Discipline (^a N=67)	
Audiology	3 (4.5)
Dietetics	13 (19.4)
Nursing	12 (17.9)
Occupational therapy	12 (17.9)
Ultrasound technology	1 (1.5)
Pharmacy	9 (13.4)
Physical therapy	3 (4.5)
Social work	8 (11.9)
Speech-language pathology	4 (6.0)
No response	2 (3.0)
Work setting affiliation (^a N=67)	
Publically funded health care facility	59 (88.0)
Privately funded health care facility	5 (7.5)
Post-secondary institution	2 (3.0)
No response	1 (1.5)
Geographical region (^a n=67)	
Metro Vancouver	45 (67.2)
Outside Metro Vancouver	18 (26.9)
No response	4 (6.0)
Average number of students supervised by preceptor per year	
1 to 2 students	31 (46.3)
3 to 5 students	18 (26.9)
6 to 10 students	5 (7.5)
More than 10 students	6 (9.0)
No students yet	6 (9.0)
No response	1 (1.5)
Total number of students supervised over the preceptor's career (^a n=67)	
1 to 2 students	6 (9.0)
3 to 5 students	9 (13.4)
6 to 10 students	10 (14.9)
More than 10 students	38 (56.7)
No student yet students	3 (4.5)
No Response	1 (1.5)

^a Characteristics reflect those participants who completed all 8 modules. Demographic information was not available for those who completed only part of the *E-tips* program.

indicated that they would recommend E-tips to others and 95.5% rated E-tips as being either “very applicable” or “applicable.” More than 60% of the respondents indicated the modules had increased their level of confidence more than expected (more than I expected = 49.2%; much more than I expected = 10.8%), 33.8% reported that their confidence increased as expected, and only 6% felt

E-tips had less impact than expected. While there was no relationship between the number of students taken by a preceptor in any given year and the degree of applicability or confidence level gained from E-tips, preceptors who had supervised more than 10 students over their careers reported greater applicability of the modules than those who had supervised fewer than 10 ($p<0.006$). Additionally, irrespective of the number of students supervised, participants who reported the modules to be more applicable also reported higher increases in confidence in their teaching ability ($p=0.001$). A majority of participants rated the E-tips Web site usability high; 100% indicated the site was easy to navigate, 98.4% indicated they were able to open the module content menu and navigate to other areas easily, and 92.3% indicated that the text was readable.

Preceptors noted that the content within the modules was well laid out; the screens were “bright” and “attractive”; and the modules had a good balance of questions, self-reflections, examples, pop-ups, and videos. Still, there were some respondents who reported challenges with certain aspects of the technology. A majority of the problems were associated with slow Internet and server difficulties. Approximately 36% reported difficulties with links within the modules not opening, and 21.5% noted that the videos did not always load and play within a reasonable time. A few expressed frustrations with access to reflections and answers to exercises after exiting the modules, and found it a nuisance to have to either save their reflections on to personal computers or to print them as hardcopies for future use. A small number also noted that the learning style inventory was cumbersome to use.

DISCUSSION

The Web-based preceptor education resource, E-tips, was successfully created and its evaluation indicated that it effectively met the learning needs of a large inter-professional group of preceptors within British Columbia, Canada. E-tips was officially launched in May 2008 and now serves as an additional online tool that addresses practice education issues.

Preceptors who participated in the pilot project reported that the modules were highly applicable to their teaching role, with many indicating that they had greater confidence in their own teaching skills upon completion of the modules. As might be expected, there was a moderate positive correlation between reported applicability and increases in teaching ability. Unexpectedly, the more-experienced preceptors found the module series more applicable than those with less experience. Because the number of students precepted over their careers is a reflection of the number of years preceptors have been in

Table 3. Participants' Perceptions of Module Applicability

Module	No. of Respondents ^a	1=Not Applicable, No. (%)	2=Slightly Applicable, No. (%)	3=Moderately Applicable, No. (%)	4=Very Applicable, No. (%)	5=Extremely Applicable, No. (%)	Mean (SD)
Setting the Stage for Clinical Teaching	90	-	-	4 (4.4)	51 (56.7)	35 (38.9)	4.3 (0.6)
The Role Learning Plays in the Practice Learning Experience	80	-	1 (1.3)	3 (3.8)	37 (46.3)	39 (48.8)	4.4 (0.6)
Enhancing Your Teaching Skills	72	-	-	3 (4.2)	27 (37.5)	42 (58.3)	4.5 (0.6)
Fostering Clinical Reasoning	70	-	-	11 (15.7)	37 (52.9)	22 (31.4)	4.2 (0.7)
Giving Feedback	72	-	3 (4.2)	9 (12.5)	24 (33.3)	36 (50.0)	4.3 (0.9)
The Evaluation Process in Clinical Education	71	-	1 (1.4)	2 (2.8)	35 (49.3)	33 (46.5)	4.4 (0.6)
Supporting the Struggling Student	69	-	1 (1.4)	9 (13.0)	25 (36.2)	34 (49.3)	4.3 (0.8)
Strategies for Resolving Conflict	67	-	1 (1.5)	8 (11.9)	26 (38.8)	32 (47.8)	4.3 (0.8)
Overall applicability of program ^b	66	-	-	3 (4.5)	32 (48.5)	31 (47.0)	4.4 (0.6)

^a The number of respondents reflects the number of participants who completed the respective module.

^b Although 67 participants completed all 8 modules, 66 participants provided a response to the questions on overall applicability.

practice, their sense of increased applicability may reflect changes in practice and in the postsecondary curriculum that have occurred over time. For some, the E-tips series may have been a timely “refresher course.” Alternatively, preceptors with longer histories in their professions have had greater opportunities to engage in self-reflection and to identify their specific learning needs, and therefore are better able to find relevance in such educational programs. These findings echo similar stages outlined in the “unconscious incompetence to unconscious competence” learning

cycle.⁸ Those with less experience often are less aware of what there is to know (“unconscious incompetence”), and may overestimate their ability; while those with more experience have a greater awareness of what there is still to learn and recognize opportunities to develop their skill and knowledge (“conscious incompetence”).

Overall satisfaction with the modules was high and those who completed all 8 modules said that they would recommend E-tips to other preceptors. The format, design, and length of the modules were also positively received

Table 4. Applicants' Perceptions of Module Length

Modules	No. of Respondents ^a	1=Too Short, No. (%)	2=Just Right, No. (%)	3=Too Long, No. (%)	Mean (SD)
Setting the Stage for Clinical Teaching	90	3 (3.3)	80 (88.9)	7 (7.8)	2.0 (0.3)
The Role Learning Plays in the Practice Learning Experience	80	3 (3.8)	73 (91.3)	4 (5.0)	2.0 (0.3)
Enhancing Your Teaching Skills	72	2 (2.8)	51 (70.8)	19 (26.4)	2.2 (0.5)
Fostering Clinical Reasoning	70	6 (8.6)	61 (87.1)	3 (4.3)	2.0 (0.4)
Giving Feedback	72	10 (13.9)	62 (86.1)	-	1.9 (0.4)
The Evaluation Process in Clinical Education	71	-	62 (87.3)	9 (12.7)	2.1 (0.3)
Supporting the Struggling Student	69	-	68 (98.6)	1 (1.4)	2.0 (0.1)
Strategies for Resolving Conflict	67	3 (4.5)	55 (82.1)	9 (13.4)	2.1 (0.4)
Overall Program Length ^b	1207 ^b	27 (2.2%)	1024 (84.8%)	156 (12.9%)	2.0 (0.4)

^a The number of respondents reflects the number of participants who completed each of the respective modules.

^b Perception of overall program length was determined by analyzing the numbers of “mentions” rather than the numbers of preceptors, and by summing the weighted numbers of “too short” mentions (27) plus the numbers of “just right” mentions (1024) plus the numbers of “too long” mentions (156), and dividing by total mentions (1207) to yield the mean and standard deviation.

by users. However, some of the preceptors did encounter technical difficulties with interlinks and downloads of certain videos. These challenges were mostly related to the preceptors' personal computers and abilities to navigate software and were addressed by creating and uploading a page of technical tips onto the E-tips' Web site, including tips to navigate personal computers. Some of these challenges were also minimized by fixing the links and selecting alternate videos that would be easier to download on computers using low-bandwidth Internet connections. However, the inability to save work online was an anomaly of the Moodle platform itself and could not be circumvented.

Because Moodle's open source platform allowed free access for all interested users irrespective of geographical location, it offered the best delivery option for E-tips. While the primary goal of this project was to meet specific learning needs of health care preceptors in British Columbia, we anticipated that E-tips would interest other preceptors across North America and potentially around the world. This open source platform permitted wide distribution at no cost to the end user. While no formal tracking process was incorporated, such as login requirements, it was still possible to track numbers of users and their geographical locations. As of May 2009, more than 1,200 users had accessed E-tips. While the majority of users were from British Columbia, sign-ins also appeared from other provinces in Canada, the United States, the United Kingdom, Kuwait, Singapore, Afghanistan, and Qatar. Furthermore, E-tips has been approved for pharmacy continuing education credit for professional development by the provinces of British Columbia and Nova Scotia; thus recognizing it as an educational resource for pharmacy preceptors. Additionally, E-tips has been incorporated into the University of Toronto's Faculty of Pharmacy's Teaching Associate Educational Program to help enhance the teaching and assessment skills of preceptors. There is also an initiative by the School of Physical and Occupational Therapy at the University of McGill to translate the English version of E-tips to French to allow use of these modules as a regular component of their preceptor training. Marketing of E-tips continues to progress through a series of activities such as design and dissemination of postcards in mailouts to professional organizations, and at professional conferences and face-to-face presentations to various health organizations.

A predominant goal of any preceptor education program should be to increase the frequency of desirable precepting practices by health professionals and improved practice education experiences by students. While preceptors participating in this pilot study felt they had benefited from the modules, future studies are needed to validate whether perceived benefit translates into improved precepting practices and enhanced student learning experiences.

As with any study, this study has limitations. About a quarter of the participants did not access all 8 modules. Limited access may have been due to a number of factors such as lack of adequate computer skills, time, motivation, or perceived benefit. However, because select viewing of the modules by participants had not been anticipated by the study team, no evaluation process was incorporated to understand the rationale for failure to access all 8 modules. This aspect may have also contributed to another limitation – that of self-selection – resulting in a sample of preceptors who were highly motivated to complete all 8 modules. Additionally, the pilot study was limited to preceptors residing within the province of British Columbia. Hence, participants in this study may have different views from those residing outside the province. However, given the multidisciplinary focus of E-tips and the commonality of practice education experience with other parts of the world, some overlap in perspective is likely to occur. Finally, the objective of this study was limited to evaluating perceived usefulness of E-tips. While the majority of preceptors expressed increased confidence in their ability to teach, future studies will need to examine if this perceived benefit translates into practical application with improved preceptor behavior change and student learning experiences.

CONCLUSIONS

This study confirmed that E-tips, a Web-based preceptor education resource, is a useful addition to the educational approaches currently available. Postsecondary institutions and other health care training programs are continually developing new resources to support community-based preceptors. As the fundamentals of quality preceptorship are common across many professions, it is useful to develop teaching resources that are relevant across disciplines. E-tips is such a resource and will help promote a shared language and shared ideas about clinical teaching among those working in multi-disciplinary settings and on interprofessional healthcare teams.

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REFERENCES

1. Alweshahi Y, Harley D, Cook D. Students' perception of the characteristics of effective bedside teachers. *Med Teach.* 2007; 29(2-3):204-209.

2. Edgecombe K, Bowden M. The ongoing search for best practice in clinical teaching and learning: a model of nursing students' evolution to proficient novice registered nurses. *Nurse Educ Pract.* 2009;9(2): 91-101.
3. Kassam R, MacLeod E, Collins J, et al. Meeting the clinical education needs of community-based preceptors: An environmental scan to identify format and content for a new web-based resource. *Internet J Allied Health Sci Pract.* 2011;9(2):1-9.
4. Alspach G. Calling all preceptors: how can we better prepare and support you? *Crit Care Nurse.* 2008;28(5):13-16.
5. Danielson R. Is clinical precepting a lost art? *Clinician Rev.* 2008;18(7):1-30.
6. Brown A, Voltz B. Elements of effective e-learning design. *Intl Rev Res Open Distance Learn.* 2005;6(1).
7. Cook DA, Levinson AJ, Garside S, Dupras DM, Erwin PJ, Montori VM. Instructional design variations in internet-based learning for health professions education: a systematic review and meta-analysis. *Acad Med.* 2010;85(5):909-922.
8. Bradley F. From unconscious incompetence to unconscious competence. *Adults Learn.* 1997;9(2):20-21.