Research Article

Use of ePortfolio Assessment for Developing Reflective Practitioners

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Abstract

The purpose of the newly implemented ePortfolio assessment program was to help students develop self-directed learning and reflection skills in clinical education and professional values including ethics, professionalism and conscientiousness. Development of higher-level cognitive skills through a student-centered learning modality could ultimately promote reflective learners who will continue to learn throughout their profession. Student self-assessment skills and self-learning plans were captured during the initial patient care exposure in the second year of clinical education using an ePortfolio platform in Canvas (Salt Lake City, UT) learning management system. This new learning methodology can be useful in measuring non-traditional competencies, such as ethics, professionalism and conscientiousness and provide an opportunity for students to become reflective learners. Leveraging this new tool could contribute toward creating reflective practitioners who are competent in ethics and professionalism and self-assessment skills.

Keywords: Self-directed learning; Self-assessment; ePortfolio assessment; Clinical education

Introduction

Active learning stimulates higher-order thinking, problem solving and critical thinking skills while providing feedback to both students and teachers [1-4]. It is important to educate the reflective practitioner to achieve higher levels of learning through purpose and structure, reflection, interaction, and application [5-8]. Development of self-assessment skills through reflection is an important component of active learning; it encourages students to explore values that are not easily measurable, such as motivation and attitudes. At the same time, students are held responsible for their own learning in an active and engaged learning process to promote critical thinking skills [7,9].

The e-Portfolio clinical program progression was implemented at Harvard School of Dental Medicine (HSDM), to provide the foundation needed to function as a competent and reflective provider of comprehensive, patient-centered dental care [11-13]. Students were given the opportunity to explore their own professional behavior and learning plans by reflecting upon treatment and patient encounters in areas of general competencies, specific skills and core disciplines in addition to professional values.

With an understanding that assessment drives learning, an emphasis was placed on the process of learning and the integration of critical and reflective assessment skills necessary in clinical education. This form of assessment could contribute to evaluating competencies not easily captured by traditional assessment measures. It provides the opportunity to assess knowledge-gaps, identify concerns that may interfere with learning, and develop professional communication skills.

The purpose of the study was to describe the development and implementation of a new assessment model using an e-Portfolio assessment system to engage students in developing self-assessment skills in the clinical curriculum and professional values including ethics, professionalism and conscientiousness.

Methods

Development of the instructional design was approved by the HSDM Curriculum Committee and operated by the Office of Dental Education. The e-Portfolio assessment system was composed of clinical program progression, clinic journals, and case presentation as described in Table 1 to capture the various stages of the clinical program.

Clinical program progression consists of students' self-assessments and corresponding self-learning plans. Students completed the self-assessments to be reviewed by the Promotions Board Committee. Students who were exposed to patient care in the student teaching clinic at the start of second year of the predoctoral program participated in the e-Portfolio assessment system and they were asked to complete the questions related to ethics and professionalism. Students in the third year of the dental curriculum when initial exposure to clinical patient treatment occurred were also asked to assess their own learning in areas of General Competencies, Specific Skills, and nine major Disciplines (Endodontics, Periodontics, Operative Dentistry, Fixed Prosthodontics, Removable Prosthodontics, Orthodontics, Oral Surgery, Pediatric Dentistry, and Oral Radiology) (Table 2).

The assessment areas were collapsed into two topic areas: Clinical (clinical skills, clinical knowledge, treatment planning, patient management, time management, treatment planning information, treatment planning ideas) and Communication (communication, professionalism, follows instructions, shows respect, feedback response, self-assess, self-directed).

Table 1: ePortfolio Outline.

Year Two	Year Three	Year Four

• Self-reflections on professional values
• EPC Index
	• Self-reflections on progressions before each promotions meeting
	• Mid-year and End-of-year reflection
	• Case presentation materials
	• EPC Index
		• Case completion logs
		• Progressions
		• Case presentation materials
		• Externship
		   o Pre and Post Survey
		   o Reflection Questions
		   o Procedures Tracking
		• EPC Index

Table 2: ePortfolio Self-Assessment.

General Competencies
1. I interpret information, identify relevant options, analyze them, and provide justification for the decisions I make accurately. [Critical Thinking]
2. I demonstrate good relations and show respect for patients, peers, faculty, and intra/inter-professional staff. [Communication & Interpersonal skills]
3. I demonstrate an understanding of professional codes, regulations, and ethics as they apply to dentistry. [Ethics]
4. I am consistently on time, prepared, and demonstrate professional behavior. [Professionalism]
5. I identify and address the chief complaint of my patients, accurately presenting medical records, handling referral and/or specialist issues as needed, and properly document the experience. [Patient Management]
6. I am confident and able to demonstrate my knowledge in private, academic, and safety net dental practices including the various health technology information systems found in them. [Practice Management & Informatics]
7. I instruct my patients on good oral health care practices to help prevent oral diseases. [Health Promotion]
8. I am able to complete all components of the diagnosis and treatment planning process: medical history, radiographs, exam, infection control, caries risk. [Diagnosis & Treatment Planning]
9. I accept feedback and make the necessary adjustments to provide the best care to my patients and become a competent Dentist. [Communication]
10 I am capable of identifying areas of improvement and developing a learning plan to master them. [Critical Thinking]

Reflections
1. Reflect on a positive clinical experience or where you think you are excelling at the moment. What made this so positive? What role did others play in this experience? How can you apply this experience to future events?
2. In contrast, identify an area/skill you feel is the most challenging in your dental education. How will you overcome this obstacle? Are there contributing factors that are related to this issue that might not be obvious? Do you feel comfortable "tackling" this deficit on your own?

Additional reflections after the first one
1. Previously you identified a weak area (please go back and review if needed), reflect on what steps you took to correct this problem. Who has helped you? Can this learning experience be applied to future ones? Do you think this experience is shared by many of your classmates? If so, why?

The Ethics, Professionalism, and Conscientiousness (EPC) Index was adapted from Good Medical Practice [14] as a tool in predoctoral clinical education to capture feedback from discipline directors, clinical faculty and part-time faculty, and staff. It consisted of five questions that assess soft skills like professional behavior, respect to peers and staff, patient safety, and punctuality (Table 3).

It will allow us to incorporate feedback from interactions at various levels and review the results at the Promotions Committee meetings. The ratings consisted of Agree (agree with the statement and feel confident that the student demonstrates the attributes listed), Working Toward (You feel the student is developing his/her skills in this domain) and Needs Improvement (You feel the student needs help or intervention), and Not Able to Assess (unable to provide an accurate evaluation of the student).

The guidelines were distributed to faculty and students in evaluating general competencies. These guidelines were also included in the clinical program Progression section of the e-Portfolio for reference. In performance assessment, carefully constructed scoring rubrics and training and orientation processes for faculty and students were instrumental elements for producing standardized ratings.

Lessons Learned

The current study aimed to determine how students learn best and how we can improve their learning through a reflective and interactive process. It was an effort to achieve higher levels of learning and the goal of this change was to produce self-directed learners who will continue to learn throughout their professional lives.

The preliminary observations of the current study revealed that as students progressed through the clinical program, student self-assessments corresponded more closely to faculty assessments. Self-assessment is a vital component in educating future health care professionals for life-long learning to assess their learning needs. However, there is a lack of published research that documents the long-term outcomes measures for this particular skill set. Davis reported concerns for lack of self-assessment skills among physicians, which can negatively affect overall patient care as they will be limited in making accurate assessments in areas in need of improvement [15].

More importantly, data from both the self-assessment and the EPC evaluation provided an opportunity for us to better understand the students' strengths and weaknesses, and thus act as a built in Early Response System for students in need of support. The process encouraged members of the faculty and staff to be active in the educational program by being included in this opportunity to provide valuable feedback.

The ability to evaluate their own work through purposeful self-assessment is a valuable skill to acquire during dental school in order to practice as a competent health care provider after graduation. Rubrics were an important tool for students to use to measure and monitor their progress and to reflect on their learning. Developing a rubric can help calibrate and effectively guide the students and faculty as evaluators and can serve as a consensus building component for the overall goal and success of the program [16-18].

The development and implementation of a program-level portfolio requires a strategy for instructional design, resource utilization and

Table 3: Ethics, Professionalism and Conscientiousness Index.

Domains	In the domains of knowledge, skills, and performance the student demonstrates competency.
Examples	• Student is actively engaged in learning. • Student performs self-assessment for improvement. • Student works within limits and seeks help where needed. • Student provides good standards of practice and care. • Student provides effective and appropriate treatment. Student refers patients to the appropriate alternative resources when needed. Student keeps all records (ex. axiUm) up to date and accurate. • Student respects and secures private information and follow all clinical policies and laws.
Domains	In the domains of safety and quality, the student demonstrates competency.
Examples	• Student is actively engaged in learning. • Student performs self-assessment for improvement. • Student works within limits and seeks help where needed. • Student provides good standards of practice and care. • Student provides effective and appropriate treatment. • Student refers patients to the appropriate alternative resources when needed. • Student keeps all records (ex. axiUm) up to date and accurate. • Student respects and secures private information and follow all clinical policies and laws.
Domains	In the domains of communication, partnership and teamwork, the student demonstrates competency.
Examples	• Student communicates effectively. • Student works collaboratively with all members of HSDM. • Student mentors and supports peers where possible, demonstrates understanding of when they are unable to provide mentoring. • Student provides continuity of care for patient, especially when transferring to another provider. • Student established appropriate relationships with patients.
Domains	In the domain of maintaining trust, the student demonstrates competency.
Examples	• Student shows respect for patients, faculty, staff, and peers Student treats patients, faculty, staff and peers fairly and without discrimination. • Student demonstrates honesty, integrity, and good character at all times. • Student cooperates with complaints and handle them profession. • Student is able to follow instructions and receive constructive feedback.
Domain	In the domain of conscientiousness, the student demonstrated competency.
Examples	• Student is consistently on time, prepared, and demonstrates professional behavior. • Student attends all clinic sessions and information sessions. • Student complies with the excused absence policy. • Student is responsive to patient, faculty, and staff inquires timely (ex. Emails). • Student treats all patients, faculty, and staff professionally and equally. Student has good record keeping and organization skills.

professional faculty development. The development and evaluation of portfolios can be time-consuming for both faculty members and students. Portfolio projects need to be institutional in design versus a single class project and therefore requires a more robust e-Portfolio solution that would facilitate interactivity in an existing learning management platform, along with a data management and reporting system.

Conclusion

An e-Portfolio system could provide a valuable platform for students to track their clinical progress across their clinical education, and able to reflect on how their experiences have shaped them as dental professionals. Given the current emphasis on reflective, self-directed and motivated learners, an ePortfolio system can be a valuable resource for developing self-reflective practitioners in a predoctoral dental program.

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