An Evidence-Based Model of Effective Self-Assessment for Directing Professional Learning


Abstract: An innovative model for conducting meaningful self-assessments is presented to help oral health care professionals efficiently determine what to learn with the goal of remaining competent. A review and analysis of the literature drawing from several databases was conducted to develop the model. Through this process, we identified four key categories: prerequisite competencies, process, applications, and tools that are suggested to occur within a supportive environment to carry out valid self-assessments and to positively influence learning choices and practice improvements.

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Key words: self-assessment, continuing education, quality assurance, continuing competency

Submitted for publication 7/11/05; accepted 9/8/05

To ensure public safety and access to quality health care, quality assurance (QA) mechanisms have included various initiatives designed to narrow the gaps between practitioners’ knowledge and performance and new advancements in health care. While mandated continuing education (CE) is commonly required in many health professions including those of oral health care providers, more recent literature suggests that as an isolated vehicle for ensuring competence, CE is insufficient.1-3 In response to these deficiencies, we developed a self-assessment model to help health care practitioners self-direct their own professional development with the aim of remaining competent.

Self-assessment (SA) has been advocated and utilized as a sophisticated approach to ensuring competence.3,4 However, current resources that enable the typical practitioner to carry out valid self-assessments are scant, disorganized, and difficult to use. The aim of this article, and the model described, is to help oral health care practitioners, individually or within continuing competence (CC) programs, to accurately self-assess practice behaviors in order to direct their professional learning toward appropriate sources in an efficient manner. We believe that this synthesis of available evidence, structured as a model, will facilitate meaningful SA through the organization it provides to thinking and subsequent implementation of SA as it is understood within the health practitioner context.

Method

With the aim of developing a conceptual model based on the best available evidence, we conducted a literature search of the databases Medline, Cumulative Index to Nursing & Allied Health Abstracts (CINAHL), and EMBASE from 1963 to November 2004, using combinations of the following key words: self-assessment, quality assurance, continuing competence, and continuing education. While more than 300 publications were identified electronically through the initial search, potential articles were excluded at the title and abstract stage if judged irrelevant by the first author. The primary exclusion criteria were the failure of the publication to address the use of SA by health care providers in a context of practice performance or behaviors. Additional salient references, including textbooks, were identified from citations given in the initial search items. This process was conducted several times until the search was deemed saturated. We purposefully included various forms of data, provided they contributed to the understanding of SA.
Through the subsequent analysis of selected literature, we categorized the data to develop a practical model for practitioners and educators.

**Background**

Keeping abreast of new knowledge is an increasing challenge for health care practitioners, including oral health care providers, and the traditional methods used to do so are under criticism due to multiple weaknesses including:

- inappropriate selection of learning activities on the part of the learner;\(^4,9-11\)
- underavailability or lack of access to desired learning activities;\(^9\) and
- poorly conducted or extraneous learning activities.\(^3,5,8,10\)

While the majority of practitioners do in fact manage to remain competent, the process is likely inefficient and may result in delayed changes in practice.\(^3,10,12,13\)

In 1975, Malcolm Knowles, sometimes known as the “father of adult education,” described the need for adults to learn how to learn, rather than only learn what is known.\(^14\) Knowles described this as the process of self-directed learning, and its importance has since been endorsed by numerous authors.\(^3,4,7\)

The validity of this process depends on accurate SA, the critical first step in self-directed learning (see Figure 1).\(^4,15\)

Several definitions for SA\(^16-18\) appear to be context-specific, particularly regarding the learner level. For example, in the early stages of learning, such as in undergraduate training, accurate SA is limited by a lack of students’ competency. For the purposes of this article, we have defined SA as an active process of developing an awareness of a personal learning exigency, meaning a pressing need, within one’s professional activities to guide the initiation of appropriate learning activities.

Three primary factors provide the rationale for conducting SA in health care practice and are summarized as providing

- direction to one’s professional learning,
- efficiency in one’s professional learning, and
- motivation to enhance one’s professional learning and implement changes needed to augment or improve performance.

In their approach to CE, health care practitioners typically use readily available resources that are of personal interest.\(^9\) Conversely, SA provides direction to learning by providing the practitioner with a systematic way for identifying his or her individual and work-related needs so that appropriate learning strategies can then be sought.\(^5,14,18-21\) Orest found that SAs gave study subjects direction and encouraged

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**Figure 1. Self-directed learning model**


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excellence in practice; she asserts that SA is “integral to determining the direction of the lifelong learning process.”

In today’s research and technological environment, most health care professionals must be extremely efficient in keeping up-to-date. It is a frustration for busy practitioners to commit hours to CE programming that offers little that is appropriate and applicable for practice. SA has the potential to improve the efficiency of professional learning. Knowles said that “the clearer that learners are about their needs for learning in a particular situation, the more efficiently can they plan their learning.” A study of Canadian dental hygienists demonstrated that subjects who determined learning needs by SA subsequently spent less time participating in learning activities that did not yield relevant suggestions for practice change.

It is essential that practitioners are well motivated to apply newly acquired knowledge and skills into practice. SA can provide motivation for learning and undertaking the subsequent change required to improve practice. Knowles suggests self-diagnosed learning needs are more motivating than those externally diagnosed, and Grant describes motivation as an outcome of resolving personal practice problems. These assertions are consistent with change theory suggesting intrinsic motivation is stimulated as a result of recognizing the personal relevance in learning.

The concept that SA is a learned skill, rather than an innate trait, is supported by the authors. This is important because it implies that, to become proficient, training and practice are required, and this is also encouraging because it suggests practitioners can develop the ability to SA. However, Knowles, and others, acknowledge existing tools for diagnosing one’s learning needs are inadequate. It is our objective that the following model will assist the oral health care practitioner in doing so.

**Model of Self-Assessment**

Through our review and analysis of the SA literature, we reassembled the pertinent data into four categories (Figure 2):

- the individual prerequisite competencies necessary for successful SA,
- a process for the practitioner to follow,
• applications the practitioner will apply in the process, and
• various suggested tools that are available to be used with the applications.

We suggest that practitioners submit themselves to each of the four categories to determine what elements are already present and what others could be further developed. The final essential component of the model is a supportive environment, which is necessary to conduct valid SAs. We propose that the use of the model by practitioners, or some variation of it within CC programs, will yield a valid SA.

**Prerequisite Competencies.** Prerequisite competencies are described from the oral health care provider’s perspective as “things that I am,” and we believe they are essential to the SA process (see Table 1). They are prerequisite in that, for SA to occur, these practitioner characteristics need to be in place for the remaining categories to be used. While prerequisite competencies are innate, they can likely be strengthened through the SA process. It is likely that these characteristics exist on a continuum, inferring that most health care providers possess them to some degree and would, at least, be able to recognize strengths and weaknesses.

Several prerequisite competencies have been described as being necessary to conducting SAs; these include a desire and motivation to improve and a willingness to learn from experience.18,28-30 Having a sense of self-awareness31,32 and curiosity6 are viewed as prerequisites for SA and outcomes.18,22 Hays et al. described other professional attributes of medical practitioners, including honesty, integrity, respect for others, and practicing ethically, as inherent in accurately self-directing one’s learning through SA.33 Orest’s study subjects reported an enhanced ability to SA when they possessed a genuine caring attitude toward clients, were goal-oriented, and were comfortable with themselves.18 Further, Waddell highlights a need for personal responsibility and accountability in directing learning needs in practice.2

**Process.** We describe the second category as process or “things I can do” (see Table 2). Knowles described a three-step process (which we have summarized, in Figure 3, for self-diagnosis in learning) that begins with the practitioner developing the knowledge of desired behaviors.14 Next, the practitioner must accurately assess his or her present performance. The third step is to compare the ideal to one’s own performance to identify any existing gaps.14

This process is well supported for identifying personally relevant learning needs and priorities.4,7,18,34,35 Gordon reviewed preregistration health professionals and advocated a similar approach as he found learners preferred that measurement standards be highly specific.36 He discovered very explicit standards increased learner motivation, decreased anxiety, improved focus, and overall facilitated the learning experience. However, it is unknown whether this is true for licensed practitioners.

**Applications.** The third category is applications or “things that I can apply” in order for the practitioner to put the process into action (see Table 3). We believe the most indispensable application for conducting valid SAs is practice reflection; much has been published in this area.37-45 The active process of reflection is a positive undertaking in that it presents opportunities to identify new practice potentials, but it does not occur spontaneously,40 suggesting it too can be learned and practiced. The main point in reflection is learning from experience where one’s concrete experiences serve as a basis for learning.37

Argyris and Schön describe the act of reflection and distinguish between “single” and “double-loop” learning, with the former occurring when learning is closed and self-confirming whereas in the latter the practitioner uses reflection to challenge conventional practice.42 Schön further differentiates between reflection-in-action, which occurs within practice activities and alters them, and reflection-on-action in which the individual looks back to the experience and examines it.43

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**Table 1. Prerequisite competencies**
- Motivated to improve18,28-30
- Possessing a capacity to develop, confident10
- Open, receptive, and curious6,18,22
- Aware31,32
- Accountable2
- Professional33
- Goal-oriented18

**Table 2. Process**
- Collect data
- Possess knowledge of desired competency
- Assess present competency
- Interpret data
- Compare and contrast data (identify gaps)
There has been considerable discourse surrounding what the practitioner should reflect upon. The literature suggests reflection is triggered by a practice event. Feelings have been described as being central to reflection, and Orest states, “A negative practice outcome may be a powerful stimulus for self-assessment.” While an unfamiliar practice occurrence provides an ideal situation for professional development, routine and habituated practice activities also present opportunities for reflection. Using reflection in daily practice to identify “what is good” and “what could benefit from improvement” is recommended to prevent fixating on negative experiences and also to recognize and validate the positive. We have summarized these reflective situations in Figure 4.

Reflective practice attempts to marry two types of knowledge described by Schön as technical rationality, knowledge based on empirical science, and tacit knowledge, which is based on intuition. Although health professionals are now more than ever expected to provide evidence-based care, best practice must still be tempered by intuitive or tacit knowledge.

In Atkins and Murphy’s review, they identified five skills important to reflection. These are summarized as the practitioner’s ability to:  
- develop self-awareness for analyzing feelings,  
- provide a description in words of important features of a situation,  
- use the description as a framework for critically analyzing the situation,  
- synthesize the experience to integrate new knowledge with prior knowledge, and  
- evaluate the reflective experience.

It is important that the practitioner realize that although situations causing stress, anxiety, or arousal are considered rich sources for reflection, they can also seriously limit the reflective process. To protect one’s self-esteem, repression and inaccurate recall may occur. In the next section we will present various tools available to the practitioner for facilitating the SA and reflective process.

In addition to reflection, other important applications such as collaboration, discussion, questioning, and debating with others have been reported as being important to SA and reflection. We have included other behaviors such as critical thinking, Table 3. Applications

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<tr>
<td>Reflection</td>
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<td>Critical thinking and insight</td>
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<td>Collaboration</td>
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<td>Discussion</td>
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<td>Challenging, questioning, and debating techniques</td>
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<td>Facilitation and support</td>
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<td>Judgment and evaluation</td>
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Figure 3. Summary of self-diagnosis process

Figure 4. Summary of reflective situations

Table 3. Applications

- Reflection
- Critical thinking and insight
- Collaboration
- Discussion
- Challenging, questioning, and debating techniques
- Facilitation and support
- Judgment and evaluation

In action

On action

Mundane (habitual)

Unexpected (surprise)

Positive

Negative
insight, listening, observing others, and judging and evaluating as potential applications, all of which complement the reflective and SA process.

**Tools.** The fourth category for successful SA is tools, or as indicated in the model as “things that I can use” (see Table 4). Tools are typically used to operationalize applications such as using journals (tool) for reflection (application). While many tools are available, practitioners should not feel compelled to rely exclusively on any single one.47

Precisely stated standards, in our opinion, are the most important tools available because they provide the foundation for comparison of one’s self that is necessary in identifying learning needs. Variations include guidelines, criteria, and benchmarks. Exposure to benchmarks has been shown to lead to more accurate SAs,48 and many authors insist that, without standards, measurement of one’s performance is significantly flawed, if not impossible.2,28,49,50 Precisely stated standards, in our opinion, are the most important tools available because they provide the foundation for comparison of one’s self that is necessary in identifying learning needs. Variations include guidelines, criteria, and benchmarks. Exposure to benchmarks has been shown to lead to more accurate SAs,48 and many authors insist that, without standards, measurement of one’s performance is significantly flawed, if not impossible.2,28,49,50

Feedback for comparison to one’s own performance can also be provided by peers and patient outcomes.4,18 Orest’s study subjects reported that working as a sole practitioner removes this key tool in remaining competent.38 Thus, individuals in solo practice must make additional efforts to establish opportunities for feedback. Using peers to help identify one’s strengths and weaknesses is a technique recommended in undergraduate professional learning34 and is required in some post-registration environments.51

Mentors have special benefits in providing feedback by challenging their clinician mentees and acting as a support for them.45 Ideally, mentors act as models for SA and reflection by disclosing patient problems that arise and sharing distressing feelings while still demonstrating maintenance of their own self-esteem.45 Less experienced practitioners are encouraged to seek out a more senior provider early in one’s career to serve as a mentor.

Journals and diaries are well supported as a key tool in the reflective and SA process37,45,52 and have been shown to lead to practice change.11 While journals allow for the retention of experiences, reflections, and questions and provide a record for making comparisons of observations over time,39,55 they need to be handled in a sensitive manner as a safe environment is required for honest self-scrutinization.14,46 The function of the journal and the user’s individual style should dictate the journal design and structure as much as possible.

Portfolios have been described as a method for authentic assessment54 and have been reported to promote personal responsibility and relevance in learning to enhance motivation.18,54 Castledine recommends simple portfolio systems because evaluating one’s self can seem daunting and cause anxiety.55 While portfolio use has been recommended in pre-registration education to facilitate reflection,34,56 a deficiency of portfolios has been described as reinforcing weaknesses without facilitating learning and problem solving.57 Tiberius and Tipping say that “there is no use to giving [learners] feedback about performances unless . . . they have some alternative course of action or behavior.”5 There is a potential for oral health care practitioners to become (self)aware of performance deficiencies but be insufficiently equipped to proceed with appropriate learning.

Many regulatory bodies and professional associations provide SA tools for their members. Personal Education Plans or PEPs, developed for doctors in the UK, attempt to base learning plans on needs identified by the practitioner and his or her tutor as opposed to “choosing their [general practitioners’] favourite subject.”58 PEP program participants reported improvements in their quality of patient care.58 The College of Dental Hygienists of Ontario (CDHO) requires maintenance of a professional portfolio demonstrating learning activities are selected based on SA, and an SA tool is provided to facilitate comparison of practice behaviors to standards.59

Audiovisual recording is a powerful tool for SA (e.g., videotaping and then reviewing a patient care situation).39 Described as a direct and valid method,47 audiovisual recordings of the practitioner “in action” stimulate reflection by allowing the careful review of practice events that otherwise pass by quickly.39 While very effective, this tool has the potential to arouse anxiety in participants and requires experienced facilitation; this is likely why it has remained primarily in undergraduate settings. Examination of critical incidents, described as experiences in practice that provide significant mean-

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<th><strong>Table 4. Tools</strong></th>
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<td>• Standards, guidelines, and benchmarks2,28,46-50</td>
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<td>• Feedback (mentors, peers, and patients)4,18,34,45,51</td>
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<tr>
<td>• Journals, diaries, and portfolios14,37,45,52,54,56,57</td>
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<td>• Mentors and modelling45</td>
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Environment. The validity of our model is conditional on specific environmental factors being in place. Knowles remarks that the very act of exposing one’s deficiencies as required for accurate SA is a contradiction to the competitive learning environment typically created from the beginning of formal education.14 Adult learners, particularly in health care, are conditioned as undergraduates to be defensive of their perceived level of competency, and this is further encouraged in professional environments.

Knowles asserts that SA requires a “warm, supportive, nonthreatening climate.”14 Contemporary literature agrees with Knowles’s assertion and supports a safe environment that has removed the possibility of blame and punishment and, instead, uses constructive support and the rewarding of effective SAs.39,49,52,62,63 These factors must be carefully considered when incorporating SA into programming.

Discussion

The 2000 Health Professions Regulatory Advisory Council (HPRAC) report on QA programming revealed that approximately three-quarters of the health professional regulatory colleges in Ontario, Canada, had included SA in their professional requirements or were in the process of doing so.64 While promising, the next step—improving the rigor and validity of SAs—needs to occur.

An important criticism of SA surrounds its accuracy.27,35,65,66 Gordon found the validity of SAs to be only moderate to low, but he also concluded that effective training in SA strategies could improve accuracy.27 A major concern of SA is that the poorest performers are least able to accurately self-assess and they consistently overestimate their ability.27,35 Kruger and Dunning reported the phenomena of poorer performers overestimating their performance, middle performers being most accurate, and the highest performers underestimating their performance.66 Gordon stated that SAs were more related to self-attributions than external feedback.27 Woolliscroft et al. assert that repeated feedback provides the basis for self-evaluation and forms one’s self-view and that these perceptions may be resistant to change later especially in the poorest performers, even when contradictory feedback is provided.35 While global assessments of competence appear to be more accurate, it has been concluded by others that “self-directed learning activities may be misdirected” because study subjects have been unable to identify their specific learning needs.67

Clearly, health professions educators need to provide opportunities for students to learn how to accurately SA their performance, but we believe two other important points arise from these findings. First, accurate SA requires a base level of competence. SA strategies are generally appropriate for improving on existing professional competence and narrowing the practice-research gap. Second, we view advocating for SA by health care professionals as a mechanism for improvement for the middle majority and high-level practitioners, rather than for grossly incompetent providers. Here, other methods, such as detection and mandatory remediation through QA programming, remain justified to ensure public safety.

Whether or not the prerequisite competencies we identified as necessary for SA can be developed or if they are strictly innate, we believe the remaining categories of the model can be taught, practiced, and learned. In light of the problems surrounding the inaccuracy of SA, opportunities for students to learn and practice the components of the SA process should be included in the undergraduate curriculum, and forums should be implemented where practitioners can also learn these skills. The first author has conducted such workshops for undergraduate and practicing dental hygienists. While outcomes have not yet been measured, participants have responded favorably to the SA process. The importance of reflection on practice experiences, positive and negative, unexpected and mundane, cannot be overemphasized. Further, practice standards should be viewed as essential to the SA process.

Psychological implications limiting practitioner ability to carry out valid SAs present complex challenges and underscore the importance of a supportive environment for SA. While it is commendable that regulatory bodies have included SA in QA mechanisms, the process and outcomes should be private and confidential but simultaneously well facilitated and supported. The punitive and policing nature in some QA/continuing competence systems does not persuade practitioners to reveal uncertainties in their work. Oral health practitioners need to be encouraged to question their current practice and view discrepancies in data as opportunities for learning and growth. A nurturing environment for SA is critical to its validity.
Conclusions

The central objective in SA is that oral health care practitioners will recognize voids in their current knowledge, skill, or attitude in order to direct relevant subsequent learning and professional development. We assert that the potential for appropriate choice of learning activities is enhanced when valid and reliable SAs are conducted, thus promoting practice change and improvements.

The purpose of this article is to provide a clear framework for SA in order to, first, improve the self-directed learning activities and outcomes of practitioners and, second, provoke further investigation and research. We believe our model will assist in both of these aims. In the foreseeable future, health care providers will need to be proactive and efficiently manage their learning in order to ensure ongoing competence.

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