Theory of reflection in learning for radiation therapists

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Abstract Practicing reflectively can assist the radiation therapist to monitor their work, foster professional growth and encourage currency of skills. Reflection is an attractive and desirable component to a radiation therapist’s skill base. To provide radiation therapists the skills necessary to engage in reflection, they need a basic understanding of the theory underpinning reflection and reflective practice, and how they can be applied in the context of radiation therapy. This paper discusses the modern pioneers of reflective theory, as well as the concepts surrounding reflection and professional practice. The concepts central to experiential learning and the role reflection plays in the experiential learning cycle are described. This paper supports the role of reflection in the radiation oncology workplace and simplifies the theories of reflection described in the literature. It is the first step towards facilitating and supporting skill development in reflective thinking for clinical radiation therapists.

Keywords: Reflection, reflective practice, radiation therapy, workplace learning

Introduction

This paper discusses the theories and underpinnings of reflection in learning. It aims to clarify some of the concepts central to reflection and reflective practice. Simplifying the literature surrounding the theory of reflection and reflective practice will allow practitioners the opportunity to become familiar with the concepts central to reflection prior to being introduced to reflective frameworks and user guides on which to model reflective practice.

The radiation therapist (RT) is an integral member of a health care team in a radiation oncology department. As such, RTs are responsible for the implementation of a radiation prescription as authorised by a radiation oncologist. The RT plays a key role in the localisation of the disease to be treated, development of the treatment plan and delivery of the radiation therapy treatment. In addition, the radiation therapist needs to consider patient care, radiation safety, quality assurance, legal and professional responsibilities. The American Society of Radiation Technologists (ASRT) outline that, ‘professional judgment and critical thinking’ are important skills to display in daily practice when assessing accuracy and appropriateness of treatment delivery, anticipating patient needs and being a valuable member of the interdisciplinary team in an ever changing and advancing environment. The role of the RT is rapidly evolving as technology and techniques advance. Developments over the past decade have been considerable and there are strong indications that the coming years will continue this trend. In order to stay current with changing techniques and emerging technology, as well as manage the varied and demanding role that is required of a RT, it is important to incorporate reflection into their everyday practice. Practising reflectively can assist in monitoring practice, encouraging professional growth and support maintaining currency of skills. It can allow the practitioner to generate knowledge about practice that is not available from other sources, to develop the artistry of their profession.

Although reflection is an attractive component to the health practitioner’s skill base, not all people have the ability to reflect and those that do have varying abilities. There are many models available to facilitate reflective practice. However, before considering these models, health professionals need a basic understanding of the theory and principles underpinning reflection and reflective practice presented in the literature. There is an immense amount of literature that covers all aspects of reflection, the reflective process and its influence in education and learning. Confusion may arise from the extensive and interchangeable vocabulary that the literature uses to discuss reflection. Kitchener discusses how terms including; reasoning, thinking, reviewing, problem solving, inquiry, reflective judgement, critical reflection, reflective practice and many more are used by authors, while all discussing reflection in some form. This makes the review and discussion of the literature on reflection difficult. A common sense and widely accepted description of reflection is as a mental process ‘with a purpose and/or an anticipated outcome that is applied to relatively complicated or unstructured ideas for which there is not an obvious solution’, where the focus is on understanding of the event or experience.

This acknowledges three elements key to the concept of reflection; reflection surrounds the process of learning, reflection is purposeful in its intent and reflection addresses areas where there is no obvious solution and complicated processing is required. Below is a discussion of some of the theories on reflection and the concepts that authors such as Dewey, Habermas and Schön have developed, as well as the important role of reflection in the experiential learning process.

Theory of reflection

Both Dewey and Habermas could be referred to as the modern pioneers of reflection, they have both contributed greatly to
the development of reflection. Both authors believe reflection serves to generate knowledge, although they have developed their ideas in different context.

Dewey’s main concern was with the nature of reflection and how it occurs within an educational and psychological context. He uses many terms to describe reflection and its link to thinking, insisting that reflection is not just a procession of conscious thoughts, but rather a process that leads to resolve a problem that initially posed perplexity and required a combination of evidence and rationality to reach an appropriate conclusion. Hence, Dewey’s model details reflective thinking as being driven by purpose and intent to reach a conclusion.

Habermas’ primary concern was with the generation of knowledge and how this process occurs, with reflection being only one element that plays a role in the development of knowledge. He posed the question ‘how do humans validate their knowledge?’ for example, how do they know that they know something? Habermas describes the different ways of validating knowledge as; empirical observations, conventional knowledge, sharing through language and critical knowing. He was concerned with the role reflection played in defining or describing what we know, then challenging the given or accepted theories that have informed our existing knowledge.

Reflection and professional practice
Most of the literature that surrounds the notion of reflection and professional practice, or the development of a reflective practitioner has been inspired by, or influenced by Donald Schön’s work. It must be acknowledged that the work of Schön discussed below is no more tested or has no more claim to being right than any other work within the field. However, his work has been a catalyst for investigation and thought into the relationship between theory and professional practice. His work has triggered interest in many contexts; theorists on professions, educators of professionals and also those whose primary interest is the specifics of reflection, which is the primary focus of the discussion that follows.

Schön’s work focused on reflection, incorporating the affective and emotional component into the reflection cycle. Schön believes that a gap exists between the formally accepted theories that guide practice and how the professional practitioner acts in daily activity, suggesting that these accepted or ‘espoused’ theories are unable to guide professional practice, that the development of knowledge and practice is more linked to the development of professionals and their associated beliefs in their everyday practical environment. He believes practitioners are often able to deal with uncertainties that arise in daily practice without the use of espoused theories, but with ‘know how’ or professional artistry. When applied to radiation therapy, Schön’s theory suggests, the knowledge and ‘know how’ that guides our daily practice is not always attributed to the well accepted theories of practice taught in a formal or informal environment, rather to daily practice where problem solving of either a patient set up, a difficult treatment plan or working with a challenging patient can provide a learning experience that adds to a practitioners existing knowledge or professional artistry. Reflection is an essential element in this learning experience and Schön describes two distinct forms of reflection, reflection-in-action and reflection-on-action.

Reflection-in-action
A definition central to Schön’s concept of reflection-in-action, is knowing-in-action. Schön succinctly conveys the concept of knowing-in-action in this quote, ‘When we go about the spontaneous, intuitive performance of the actions of everyday life, we show ourselves to be knowledgeable in a special way. Often we can not say what it is we know... our knowing is ordinarily tacit, implicit in our patterns of action and in our feel for the stuff for with which we are dealing’. This is extended into the professional arena when applied practically to a profession, for example radiation therapy. A RT may easily be able to recognise a family of symptoms that indicate treatment side effects needing physicians review and pharmaceutical intervention, or a patient behaviour that requires referral to psycho-oncology services. However, in most cases not be possible to provide a complete description of the side effects or behaviours accurately and on demand. Although in radiation therapy most decisions are made with consideration to empirical data and evidence based practice, there are many daily decisions made, ‘for which he can not state adequate criteria’, or skills displayed that there are no obvious rules for. Even when utilising evidence-based theories we are often relying on our tacit knowledge and judgements. This is the essence of knowing-in-action.

Reflection-in-action is the process that occurs when the result of an action does not accord with what was expected. It is the reflection on the unexpected outcome of an event that can then influence the actions of the practitioner in the next event. Reflection-in-action may not necessarily be a conscious process. For many expert practitioners this is a process that occurs as a part of daily practice. Incorporated into daily routine, RTs inherently practice reflection-in-action in many forms; as a means to assess the accuracy of a treatment setup, to problem solve unusual verification images or problem solve a difficult treatment plan.

Reflection-on-action
Reflection-on-action is the form of reflection that occurs after an event or action is complete, and is usually associated with verbal or written description. Aligning with Dewey’s work on reflection, Schön accords reflection as a result of a situation with an unexpected outcome. The process of reflection-on-action can be illustrated in the events that may occur in a radiation oncology department when RTs are viewing poorly aligned patient verification images from an otherwise well aligned and within tolerance treatment set up. Some criticise Schön for neglecting to acknowledge the role of imagination in reflective practice, especially those who view the combination of reflection-on-action and imagination, as vital in preventing many errors and clinical incidents occurring in health professions. It is the process of reflection-on-action that can be employed in staff debriefs or when analysing an event that has occurred either as an individual or group.

There is a great amount of debate that has arisen from Schön’s work on reflection-in-action, it generally surrounds the timing of the reflective process with practice. Moon reports how Schön contradicts himself in his work of 1987 and 1992, where initially he associates the stop and think idea with reflection-on-action and later with the concepts of reflection-in-action. Regardless, both reflection-in-action and reflection-on-action clearly describe the forms of reflection that can occur as part of daily clinical practice and serve as an essential element to learning at work, enhancing a radiation therapist’s professional artistry.

Reflection and experiential learning
Experiential learning can be defined as the integration of learning that has come from a practical situation. Similar to the literature on reflection, experiential learning seems to be an
The role of reflection in experiential learning is congruent with Schön’s definition of reflection-on-action and can easily be assimilated into the Kolb learning cycle. Kolb’s primary concern was not overused phrase and there are varying views as to what constitutes experience. Some definitions are quite broad, focusing on educational philosophies, while others such as Henry include learning contracts, group discussions, counselling and journal writing. Experiential learning can also include the integration of material presented to a learner, such as in written or oral format as experience.

Kolb’s work has been very influential on the development of adult education theory. He defines experience as action that involves physical engagement and experiential learning as a process that links education, work and personal development. Kolb’s learning cycle (Figure 1) is a self-perpetuating process identifying four phases in the experiential learning process; concrete experience, reflective observation, abstract conceptualisation and active experimentation. The learner is able to enter this cycle at any stage and continues from one learning experience to the next. The quality of reflection and hence the ability to reflect is essential to ensure the learning cycle progresses onto the next phase.

The role of reflection in experiential learning is congruent with Schön’s definition of reflection-on-action and can easily been assimilated into the Kolb learning cycle. Kolb’s primary concern was not reflection, however there are some prominent authors in the literature that expand on the use of reflection in Kolb’s learning cycle.

Reflection can take place on both a conscious and subconscious level. Boud explains that for learning to take place it is important that the learner be aware of their reflective processes in order to evaluate them and make choices about what they may or may not do as an outcome of their experiences. The model by Boud shown in Figure 2 was developed to demonstrate the process of reflection in learning.

Boud adds to Kolb’s model of experiential learning, outlining the process to include cognitive and affective elements. Here learners undertake a process of reflection by attending to feelings and re-evaluating their experience as they move towards integrating their new knowledge. This model details a process where a reflective learner must actively use knowledge gained from past experience, describe their experiences, discover and consider their emotions and attitudes associated with the event, then create order and be able to make sense of these new ideas and information gained. Boud also recognises that not all learners will be equally skilled in each sector and often least equipped in the realm of reflection, hence some may need more or less assistance to complete the reflective phase.

Reflection in the cyclic experiential learning process is a valuable tool that can assist RTs to learn from past experience, generate knowledge and alter future practice aiming for optimal patient care and radiation therapy treatment delivery. For example, a RT may reflect on the success of a complex patient treatment plan, identifying the beam configuration, methods of optimisation and resultant distribution and critical structure doses. In doing this the RT generates knowledge on the characteristics that contribute to a successful treatment plan for the specific site and can use this knowledge to apply to future treatment plans in the same anatomical region.

Atkins and Murphy go one step further to define a model of the reflective process detailing the skills required to complete the reflective cycle (Figure 3). For each stage of the reflective process they have identified and outlined, in everyday language, the personal journey that the practitioner undertakes to complete each stage with contextualised examples at each of these stages for clinical radiation therapists.

**Discussion**

All these models assimilate and quantify the role of reflection in experiential learning, demonstrating that reflection plays a vital role in the experiential learning process. In some cases the authors...
are not making huge statements on the theory of reflection, but more cementing reflection as and essential element in the experiential learning process. With constantly evolving technology in the radiation therapy workplace and the demanding multifaceted tasks that RTs face in routine daily practice, it is well accepted that currency of skills is essential. With opportunities for formal education in a radiation oncology department limited by resource, learning through practice is key to maintaining technical skills and evolving techniques towards best practice. With reflection being firmly embedded in the experiential learning process, it seems important to foster and encourage reflection for RTs.

By gaining some understanding of the fundamental principles of reflection, the core practices associated with reflection can be more easily incorporated into health professionals’ everyday practice. This may be achieved by either improving their current reflective practice skills or assisting them to understand reflective principles and encourage them to initiate the process of reflection. There is no doubt that incorporating reflection as part of professional practice in a health care profession such as radiation therapy will promote experiential learning, and also facilitate the constant evaluation of everyday practices, allowing for individual RTs and the profession to consistently move towards a best practice model.

References