

## REVIEWS

### Reflective Practice and Its Implications for Pharmacy Education

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Pharmacy students require critical-thinking and problem-solving skills to integrate theory learned in the classroom with the complexities of practice, yet many pharmacy students fall short of acquiring these skills.<sup>1-2</sup> Reflective practice activities encourage learning from the student's own experiences and those of others, and offer a possible solution for the integration of knowledge-based curricula with the ambiguities of practice, as well as enhance communication and collaboration within a multidisciplinary team. Although reflective practices have been embraced elsewhere in health professions education, their strengths and shortcomings need to be considered when implementing such practices into pharmacy curricula. This review provides an overview of the evolution of theories related to reflective practice, critically examines the use of reflective tools (such as portfolios and blogs), and discusses the implications of implementing reflective practices in pharmacy education.

**Keywords:** reflective practice, reflection, reflective learning, self-directed learning, pharmacy education

## INTRODUCTION

The most critical step in professional education is when students are able to transfer theory learned in the classroom into practice. Unfortunately, many students are unable to transfer and apply this knowledge successfully.<sup>1,2</sup> A longitudinal study of pharmacy students' critical-thinking skills found that while the skills of analyzing, synthesizing, and evaluating appeared to improve over the course of a pharmacy program, students' motivation to think critically did not.<sup>3</sup> Integrating reflective practices in pharmacy education offers a possible solution to bridging theory with practice. While the introduction of reflective practices into the curricula presents its share of challenges, doing so has the potential to enhance future pharmacy practice.

Reflective practice forms the basis of deep learning from past experiences. It helps develop critical thinking, problem-solving, and self-directed and lifelong learning skills through gaining new understandings, new perspectives, and new alternatives for future experiences. Incorporating reflective practice into pharmacy curricula assists students in bridging theory with the complexities of practice. However, reflective practices have shortcomings as well as strengths. While reflective practice enhances

the development of competent, self-directed, lifelong learning,<sup>4-8</sup> mentoring,<sup>9</sup> professional development<sup>7,10-18</sup> critical evaluation,<sup>19-21</sup> and problem-solving strategies,<sup>22-24</sup> there is limited published literature on the use of reflective practice in pharmacy education or practice.<sup>4,24-27</sup>

Reflective practices have been used to educate doctors, nurses, physiotherapists, occupational therapists, and other allied health students in higher education,<sup>5,19,23,28-33</sup> to assist in bridging the gap between theory and practice. Thus, it is unclear why pharmacy education has not embraced the use of reflective practice. Lack of resources and lack of motivation are potential reasons, but these are not unique to pharmacy.<sup>34</sup> One explanation is that pharmacy education research focuses on developing a knowledge base,<sup>35-38</sup> providing services,<sup>39,40</sup> and mastering skills<sup>41,42</sup> rather than on developing reflective information exchange. Also, reflective activities in pharmacy education may be limited because of a lack of available teaching resources. To effectively implement reflective practices, educators must understand the elements of reflective practices in pharmacy and adopt reliable assessment strategies to evaluate the tools of reflection.<sup>43</sup> Another reason for the lack of reflective practices in pharmacy education may be because there is no structured framework or guidelines for implementing reflective practices such as there are in other health professions education.<sup>23,30,31,44</sup>

Perhaps a starting point for encouraging use of reflective practices in pharmacy education would be to

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structure a framework of reflective practice activities throughout the pharmacy curriculum. If appropriate reflective tools are used and if reliable assessment strategies are developed, thereby meeting the learning outcomes for the curricula, then it is possible that reflective learning could take place starting from the undergraduate level and following through to postgraduate and intern training levels.

The term *reflective practice* is open to multiple conflicting interpretations and has been applied in a myriad of ways in many professional environments.<sup>45(p5)</sup> The notion of reflection holds different connotations, for example, the terms *reflective thought*, *reflective dialogue*, and *reflective learning* describe a deeper, internal process; *reflective practice* has been used interchangeably with *reflection* as an umbrella or generic term, whereas, *reflective writing*, is an example of a reflective instrument and is simply a representation of reflection.<sup>46</sup>

Another term, *critical reflection*, refers to a more intense level of reflection. Critical reflection on an experience is a key element of a process that creates meaning out of an experience. Once meaning is sought, deep learning is achieved. Critical reflection explores a review of experiences and occurs when a person's "beliefs, biases and approaches"<sup>31(p204)</sup> are taken into consideration as well as the attitudes and firmly held beliefs of others who may have contributed to the outcome of an incident.<sup>31(p204)</sup> It conceptualizes clinical practice by taking account of other crucial elements, perspectives, biases, and assumptions by drawing on a person's awareness of self and others.

## EVOLUTION OF THE CONCEPT OF REFLECTIVE PRACTICE

Several researchers have contributed to the development of methods of reflection and forms of assessment of reflection in practice.<sup>5,21,47-49</sup> The main concepts of reflective practice relate to the understanding of: reflective thought, the tacit dimension, technical rationality, the experiential learning cycle, and the 7 elements of the reflective process and learning.

### Reflective Thought

*Reflective thought* is an important aspect of learning, which involves more than a sequence of simple ideas, but rather a more complex *consequence* of ideas.<sup>50(p2)</sup> Dewey, one of the seminal authors, philosophers, and educators of the reflective process, defines reflective thought as the "active, persistent and careful consideration of any belief or supposed form of knowledge in the light of the grounds that supports it and the further conclusions to which it tends."<sup>50(p6)</sup> Dewey argues that reflection implies that something is believed<sup>50(p8)</sup> not

through direct association of it with an event, but as a result of witnessing that event. He claims that we are constantly searching for evidence to support our beliefs and that doing so allows us to provide the best alternative or an explanation that holds more weight. Therefore reflective thinking allows "judgment to be suspended in order for further inquiry" to be conducted.<sup>50(p13)</sup> For example, if a man were to stand in the rain, he would feel the rain. However, if on another occasion, he walked outside after it rained, he would see the damp grass and puddles in the street and infer that it had rained. By developing skills in reflective thought, pharmacy students and practitioners can develop inferences for critical decision-making.

### The Tacit Dimension

Polanyi introduced the concept of *tacit dimension*, where someone uses their intuition and *tacit knowing* of previously obtained information that "cannot be put into words" to guide them to new discoveries as "we know more than we can tell."<sup>51(p4)</sup> This suggests that even on a subconscious level, reflective learning processes exist. He establishes this concept through the example of facial expressions, pointing out that people can recognize the face of someone they know among millions of other faces, yet they do not know how they gained the knowledge to do so. Abstracting knowledge from previous experiences and applying that knowledge to new experiences can contribute to reflection in practice, allowing new insights and understandings to develop and alternative suggestions or conclusions to be made.

### Technical Rationality

Schon's theory espouses *technical rationality* (knowledge and skills based) and how this is integrated in practice.<sup>52</sup> He identified the strategies by which professionals enhance their learning while they engage in practice.<sup>43</sup> His influential work describes the competence of the practitioner in terms of "reframing the problematic situation"<sup>52(p132)</sup> and reflecting on the reasons why that problem came about. He contends that professionals respond to events by employing tacit understandings (originally described by Polanyi), which have evolved from clinical practice rather than from knowledge itself. In terms of technical rationality, professional practice involves a process of critical thinking and problem solving, yet professionals often disregard the problem setting by which decisions are made. Many issues that practitioners address involve uncertain, complex circumstances and are quite puzzling. Therefore, for solving problems in professional practice, all aspects should be considered.

Schon's work integrates reflection with action in 2 pivotal constructs: *reflection in action* and *reflection on*

action, where the reflection in action occurs during professional practice.<sup>52</sup> For example, pharmacists are continually faced with unique and ambiguous clinical problems that require prompt thought, action, and problem-solving skills, whereas reflection on action occurs as a retrospective process after the action has occurred. During this reflection-on-action process, practitioners attempt to look back, analyze, and critically review an event to determine what aspects led to their actions. Pharmacy students and pharmacy practitioners could benefit greatly from adopting more structured reflective practice activities such as documenting specific interventions in a reflective diary, and addressing alternative outcomes to improve future interventions and enhance practice.

### Experiential Learning

Kolb<sup>53-55</sup> demonstrated critical reflection as the core of *experiential learning*. Kolb acknowledges the early work on experiential learning by John Dewey, Kurt Lewin and Jean Piaget, and draws on elements of previous models and theories from William James, Carl Jung, Paulo Freire, and Carl Rogers. Inspiration, particularly from Lewin’s model, led to the formation of his Experiential Learning Theory (ELT).<sup>54</sup>

Kolb’s model of experiential learning is a form of the reflective cycle. It begins with the learning experience, followed by the practitioner reflecting on that experience. The practitioner then develops theories and draws conclusions, which lead to experimentation with new insights and understandings, which in turn provide further opportunities to reflect on that experience.<sup>56</sup> The ELT defines learning as “the process whereby knowledge is created through the transformation of experience. Knowledge

results from the combination of grasping and transforming it.”<sup>54(p41)</sup> This theory involves reflecting on experiences to scaffold the lifelong learning process. Through this process, connections are drawn from classroom knowledge with previous studies or experiences. This enhances the difficult transition of integrating theory with practice. Critical reflection involves a student or practitioner asking questions about an experience in light of previous experiences, where suggestions, alternatives, or conclusions are drawn through what he terms as *abstract conceptualization*, which is 1 of 2 modes of grasping experience; the other is by *concrete experience*. Hypotheses are formed from the process of reflective practice and, in particular, critical reflection on experience, which can then be tested when future experiences arise. Therefore, experiential learning plays a crucial role in pharmacy education as it allows pharmacy students to experience clinical practice in the “real world.” Pharmacy students and practitioners who develop their skills using reflective learning practices are able to reflect on reasons why a particular task could have been performed differently, and critically analyze and develop strategies to improve future experiences and outcomes.

### Seven Elements of Reflective Processes

Boud et al<sup>57</sup> explored the components of reflective practice and identified 7 elements of reflective processes to guide the learner in self-directed learning (Figure 1).<sup>58</sup> These elements assist in integrating a knowledge-based curricula into a practical setting by promoting reflection and its outcomes. “The outcomes of reflection may include a new way of doing something, the clarification of an issue, the development of a skill, or the resolution of

Dewey 1910	Polanyi 1967	Schon 1983	Kolb 1984	Boud et al 1985	Mezirow 1990
<i>Reflective Thought</i>	<i>Tacit Dimension</i>	<i>Technical Rationality</i>	<i>Experiential Learning Theory</i>	<i>Seven Elements of Reflective Process</i>	<i>Transformative Learning</i>
Reflection through inferences and ‘thought training’ through habit	Tacit knowledge ‘We know more than we can tell’	Reflection-in-action Reflection-on-action	Integrating theory with practice	(1) Returning to the experience (2) Attending to feelings (3) Association (4) Integration (5) Validation (6) Appropriation (7) Outcomes and Action	Distinguishes between non-reflector, reflector and critical reflector

Figure 1. Timeline of the key educators in the development of reflective practice.

a problem.”<sup>57(p34)</sup> Understanding the components of the reflective process offers a possible measure to assess reflectivity and reflective ability.<sup>49,58,59</sup>

### Transformative Learning

Mezirow<sup>60</sup> asserts that an experience makes no sense without meaning, and once meaning is established, learning can be achieved. Reflection involves a conscious thought process that involves *transformative learning* to achieve a more open perspective, which then provides a baseline for interpreting to guide decision-making or action for future experiences. Transformative learning means that learning can be applied to similar future situations even if they are not the exact situation.<sup>31</sup> For example, not all pharmacy practitioners experience the same events in dispensing, counseling, interacting with patients or other professionals; however, pharmacists can learn from those events or experiences (or from the experiences of other practitioners) and adapt their learning to future experiences. Mezirow distinguishes between 3 types of learners: non-reflectors, reflectors, and critical reflectors.<sup>61</sup> Non-reflectors are those who do not exhibit

any evidence of reflection. “Reflection enables us to correct distortions in our beliefs and errors in problem solving”<sup>60(p1)</sup> and “give meaning to an experience”<sup>61(p104)</sup> Critical reflection, which “triggers transformative learning,”<sup>60(p1)</sup> goes beyond reflection as it involves a critique of one’s original beliefs. “Critical reflection is not concerned with the how or how-to of action but with the why, the reasons for and consequences of what we do.”<sup>60(p13)</sup> Pharmacy students and future practitioners can benefit from developing skills of transformative learning to enhance critical-thinking skills, which are required in clinical practice.

The early key researchers of the reflective process contributed greatly to the current understanding of reflective practice (Figure 2). Their theories and models have been adopted, adapted, or used in combination to facilitate reflective activities and thus equip the health professional for life as a reflective practitioner.

Three main processes – acquire, learn, and integrate – can be drawn from the theories of these early educators: (1) acquire new knowledge as a direct result of learning from experience; (2) learn from experience by transformation of



Figure 2. Reflective Concepts framework: acquire, learn, integrate, new perspectives.

knowledge, thus linking academic knowledge with practice; and (3) integrate new knowledge or new understanding to enable better choices or actions in the future. These core outcomes are obtained through thinking about past experiences, events, or situations, and acknowledging the feelings, approaches, biases, and ideas that arose as a result of the experience. This knowledge can be applied to integrate previous knowledge with new understandings and perspectives in practice (Figure 2).

## TOOLS USED IN REFLECTIVE PRACTICE

Historically, healthcare disciplines such as medicine, nursing, and allied health have used reflective practice tools in skill development because they enhance reflective ability.<sup>7,59,62</sup> However, this has not been true of pharmacy education or the pharmacy profession. In the last 5 years, however, reflective practice has been introduced in some community pharmacy settings, and has encouraged students and practitioners to pursue lifelong learning and continued professional development.<sup>25</sup> However, the clinical setting should not be the first or only place for initiating the art of reflection, given its positive impact on lifelong learning and continued professional development. Reflective practice should be introduced in pharmacy education, starting in the preparatory stages and continuing through to the graduate and post-graduate stages.

Educators in medicine, nursing, and allied health professions use reflective activities such as reflective writing tasks to promote reflective practice.<sup>15,20,32,62-67</sup> These assignments take various formats to suit learning styles and learning outcomes such as journals,<sup>4,5,20,59,68-70</sup> diaries,<sup>15</sup> log books, blogs,<sup>21,47-49</sup> portfolios,<sup>13,18,64,71-73</sup> e-portfolios,<sup>74-76</sup> reflective statements,<sup>77</sup> reflective essays<sup>78,79</sup> self-assessments,<sup>80</sup> and peer-assessments,<sup>81</sup> all of which are effective tools for promoting and enhancing reflection.

The medical, nursing, and allied health disciplines embrace journal writing as a means of encouraging the learner to look back on events and analyze them further, thereby promoting reflective thinking and practice.<sup>20,59,69,70</sup> Reflective blogs have been documented in the literature in the medical,<sup>82</sup> allied health,<sup>21</sup> and dental professions,<sup>47,49</sup> and have proven to be a useful tool to document and measure reflective practice electronically. Blogging has emerged as a more time-efficient and engaging reflective tool. Typically, this type of electronic format is accessed on a daily basis by an individual and comments are shared and exchanged with a forum of peers.<sup>21</sup> Blogs are similar to online diaries, which may encourage greater group participation as it “cultivates students’ reflective peer-to-peer learning”<sup>83(p183)</sup> The most attractive aspects of

using a blog for reflective learning are their flexibility, accessibility, ease of use, organized social interaction, and empowerment of students by providing a forum for their voice to be heard, while still learning critical-thinking skills.<sup>21,47,48</sup> It allows the author to present content and add hyperlinks, video recordings, photographs, illustrations, and comments to a site, which can then stimulate group discussion, interaction, sharing of ideas and experiences, feedback, and personal thoughts and commentaries, thus embracing the reflective process.<sup>47,48</sup> Group blogging, for example, empowers students or practitioners to express their views, biases, and clinical-reasoning skills in a forum that often provides immediate feedback on views, suggestions, and alternatives. Thus, through communication and collaboration, participants are encouraged to consider other ideas.

Some health professionals prefer to use portfolios to enhance reflective practice, as these challenge “existing norms, while at the same time, one’s personal values and assumptions in our personal and professional lives.”<sup>16(p135)</sup> Portfolios, whether handwritten or electronic, are similar to journals in that they contain students’ reflections on personal experiences and course content. Although mainly used as a private document to enhance reflective learning, portfolios also are similar to a reflective diary as they may facilitate peer review. For example, portfolios could be used to provide peer feedback on methods used in preparing extemporaneous products such as creams, ointments, lotions, solutions, eye drops, or eardrops. Reflective portfolios are seen as a useful tool for initiating triggers for reflection and feedback, and linking academic knowledge with clinical practice.<sup>72,84</sup>

Learning portfolios make students more aware of their own learning and better able to support their peers’ learning.<sup>73(p283)</sup> Portfolios have been a useful mechanism in general practice vocational training by bridging knowledge and experience in hospital and general practice, while exploring emotive concerns from the clinical environment.<sup>71</sup>

A reflective statement has been a useful tool to measure reflection in medicine, and although similar to a journal, it differs slightly in its format by documenting all aspects of the “journey” in one final statement. Reflective statements are an effective tool to assess residents’ self-directed learning.<sup>77</sup>

Reflective essays have been used in the humanities and social science areas as a tool to measure reflection. In one study in which pharmacy students were required to write essays on consumer perspectives of the role of the pharmacist, the students reported that this reflective writing format increased their awareness of patients’ perceptions, which then led to new

understandings for future improvements in patient-professional relationships.<sup>79</sup>

### **SHORTCOMINGS OF REFLECTIVE PRACTICE ACTIVITIES**

While reflective writing activities have a positive impact on learning, they are effective only if 4 variables are true: if students are self-directed, are ready and motivated to learn, have the curiosity necessary to learn more, and recognize that their previous experiences are a “rich source of learning.”<sup>62</sup> If these criteria are not met, then the reflective learning activity may be ineffective. Also, barriers, such as lack of time and lack of motivation to record relevant experiences, impair the impact of implementing reflective activities in professional practice.<sup>34,71,85</sup> Even if all criteria are met, some researches still challenge the value of reflective practice as there is no guarantee that a learner will engage in reflection.<sup>34,65,71,72,86</sup>

One of the most cited disadvantages of implementing reflective practice activities in health professions education relates to the reliability of the assessment tools and the challenges of assessing reflection in education.<sup>64</sup> This is an area for further research. Students’ theoretical understanding of concepts taught in the classroom has traditionally been assessed through academic essays, reports, or examinations. Reliable assessment of what have been called the “imponderables,”<sup>43(p193)</sup> ie, those areas with more original and creative aspects, poses unique problems. In terms of educating pharmacy students in reflective practices, limitations such as addressing reliable assessment strategies for reflective activities and allocating time to educate faculty members in the concepts of reflection present challenges for effective use.

### **REFLECTIVE PRACTICE IN PHARMACY EDUCATION**

Structuring a framework of reflective practices into the pharmacy curricula may assist with the integration of theory with the complexities of practice. Sharing learning from the students’ clinical placement experiences with their peers will build a critical reflector for lifelong learning.

Pharmacy students interact with health professionals in multidisciplinary settings. This requires an effective exchange of information as the basis for evaluating clinical decisions. The future pharmacy practitioner, therefore, must ensure that not only the correct knowledge and medications are disseminated to the patient, but that the practitioner’s personal perspectives, biases, approaches, and attitudes also be considered, as well as the experiences shared by other health professionals. Therefore, the

most appropriate reflective tools in pharmacy education are blogs and portfolios (or e-portfolios) as these allow for greater group participation and continual feedback, acknowledging the experiences of students in their respective clinical placements and sharing that experience in light of their personal perspectives, biases, approaches, and attitudes. There is limited published research on the use of portfolios (or e-portfolios) in pharmacy education<sup>26,64,74,87</sup> and negligible published research on the use of blogs in pharmacy. In contrast, there is extensive published research in other areas of health education such as the medical sciences, on the use of portfolios, e-portfolios, and blogs.<sup>7,18,58,65,66,71,76,82,86,88,89</sup> Implementation of a pharmacist’s blog with multidisciplinary team members could improve information exchange and assist with collaboration of ideas, recommendations of alternative medicine regimens, and sharing of experiences by other health professionals.

Blogs can empower students by giving them a “voice” and encourages them to consider other issues that they may not have thought of before. Blogs promote independent student learning through daily discussions of experiences among a forum of students on the blog, thus allowing the pharmacy educator to act as a facilitator rather than as an instructor. This reflective activity could also enhance communication and collaboration between the facilitator (educator) and the student(s).

If reflective practices are to be introduced in pharmacy education, then effective assessment strategies are needed so that educators are able to meet curricula outcomes. Possible methods of assessing the learning from the use of reflective tools may include determining the levels of reflection as first described by Mezirow’s categories (non-reflector, reflector, and critical reflector),<sup>21,47,49,59,61,69</sup> using the 7 components of reflection as discussed by Boud, Keogh, and Walker,<sup>21,49,57,59</sup> and/or using Schon’s construct of reflection-in-action and reflection-on-action.<sup>69</sup>

Pharmacy education may benefit from the introduction of principal tools and concepts of reflective practice in the first year undergraduate curriculum, followed by the implementation of blogs or portfolios (or e-portfolios) in the second year as part of an existing course or workshop. This would allow students to reflect on events or issues relating to pharmacy practice “mock experiences” and provide time to reflect on how things may have been better if done differently, thereby coming to new understandings and insights. These new understandings could be then shared among the group, cultivating discussion on the complexities of integrating theory with practice. Figure 3 is a suggested framework for implementation of reflective learning that could benefit a 4-year pharmacy

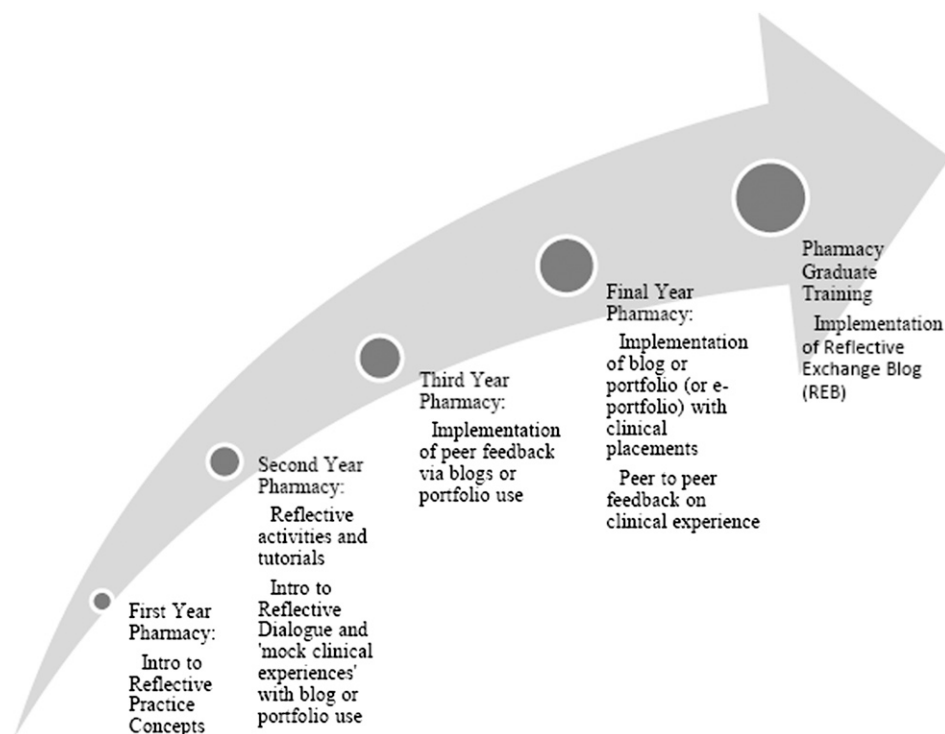


Figure 3. Possible implementation of a framework of reflective practice in pharmacy.

program or a postgraduate course. Clinical placements could be adjusted to begin at a different stage of the model.

## REFLECTIVE PRACTICE POSTGRADUATION

Incorporating reflective practice into the pharmacy curricula would have implications for pharmacy students postgraduation as well. For example, the introduction of reflective electronic instruments such as blogs in clinical practice has the potential to promote greater communication among health professionals within a multidisciplinary team, while enhancing the reflective thinking process. This continued communication about ideas, past experiences, professional advice, and clinical interventions among health professionals could be pivotal in improving pharmacy practice. For example, a reflective exchange blog (REB) only accessible by an intranet of professionals could be established. Professionals on the forum would be able to access the blog at any time to provide input or advice, or exchange ideas and experiences. This type of blog should not be used as a conversational blog. Instead, the tone should be reflective in nature in order to establish a task focus.<sup>43</sup> Reflective dialogue may include the following: How prepared were you for the experience? What worked and what did not? How did you feel about what happened? Did the environment hinder your clinical

decisions? Could things have been done differently? If so, what have you learned that you will use to change future practice?<sup>43</sup>

## CONCLUSION

This paper explored the literature on and theories of reflective practice that have been used by health professionals to integrate theory with practice. Challenges, potential benefits, possible implementation strategies, and implications for pharmacy students were discussed. Despite its shortcomings and challenges, many health professions embrace the concept of reflective practice in both education and clinical settings, yet limited research exists on reflective practice in pharmacy education. With this lack of use and research in the area of pharmacy education, the perceived true value of reflective practice and implications for today's pharmacy students remain relatively unknown.

With the constant changing environment for pharmacy practitioners, reflective practice offers to assist with the integration of theory with complexities of practice by promoting critical thinking, problem-solving, and self-directed and lifelong learning. Reflective practices will potentially improve effective communication and collaboration skills for equipping the future pharmacist for a multidisciplinary approach to health care.

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