

Reflection for Learning: Teaching Reflective Practice at the Beginning of University Study

Lynette Pretorius and Allie Ford
Monash University

Reflective practice is a key skill in many professions and is considered an essential attribute of healthcare practitioners. Healthcare students are often expected to develop reflection skills through their assignments, and this is frequently expected to occur with little explicit instruction, practice or guidance about how to reflect. Currently, there is limited guidance in the literature on how teachers can help students develop these reflective skills effectively. In this study, we describe a process for embedding reflective skills into a transition program for new healthcare students about to enter university. By allowing students to explore reflection through a method of self-discovery supported by peer discussion, we found that students were likely to recognise and value reflection as a learning tool (a concept we term “reflection for learning”). Additionally, these students were more likely to continue to practice reflection in their studies than students who had not participated in the training. In summary, this paper demonstrates that students are able to make meaningful deductions about reflective practice and their own learning through use of a basic framework in which to self-reflect, from the very start of their tertiary studies.

Healthcare educators have to teach their students to function in a complex and ever-changing environment, fostering a culture of continuing professional education in order to allow appropriate identification of multifaceted clinical problems. One of the essential attributes of successful healthcare professionals is the ability to reflect on experiences in order to improve their own professional practice. Reflective practice has increasingly become part of the accreditation requirements for nursing practitioners. It has been suggested that this increased focus on reflective practice in healthcare accreditation may reflect a convergence of four theories (Mann, Gordon, & MacLeod, 2009): firstly, that critical reflection on experience helps identify educational needs (Boud, Keogh, & Walker, 1985); secondly, that it is important to understand one’s personal beliefs, attitudes, and values in the context of professional practice (Epstein, 1999); thirdly, that continually learning to build knowledge leads to better understanding (Boud et al., 1985; Schön, 1983, 2001); and finally, that reflective practice helps professionals to become more self-aware and therefore better able to monitor their own practice (Bandura, 1986). Consequently, reflective practice allows healthcare professionals to engage in a process of lifelong learning.

The goal of reflective practice is self-discovery and growth, as well as the expansion of one’s knowledge. Models of reflective practice (Boud et al., 1985; Dewey, 1933; Hatton & Smith, 1995; Mezirow, 1991; Moon, 1999; Schön, 1983, 2001) highlight that purposely revisiting events with the need to learn from these situations will better enable a person to prepare for, and successfully deal with, future events of a similar nature. Research has shown that the ability to link knowledge and practice together results in deeper

learning, improves learning in a clinical setting, and promotes a more positive learning experience for students (Braine, 2009; Burton, 2000; Dewey, 1933; Leung & Kember, 2003; Mc Carthy, Cassidy, & Tuohy, 2013; Moon, 1999; Sobral, 2000, 2001).

In practice, reflection can occur either during the moment of practice (“reflection-in-action”), or retrospectively (“reflection-on-action”). In a recent systematic review of reflective practice pedagogy (Mann et al., 2009), there was significant support for the iterative process of reflection as first described by Schön (1983, 2001) and Boud and colleagues (1985). This process involves the initiation of reflection in response to a complex or surprising event, followed by reflection-in-action and reflection-on-action. It is often also important to evaluate and understand the emotional aspects of the experience (Boud et al., 1985). This is particularly valuable in healthcare settings, as it enables practitioners to incorporate empathy into their patient care (Gustafsson & Fagerberg, 2004).

Journaling, as a form of reflection-on-action, has previously been identified as an effective teaching strategy to encourage students to reflect on their experiences (Epp, 2008; Stevens & Cooper, 2009). It has been suggested that encouraging students to use self-reflective journals can provide an avenue to address the gap between theory and practice (Hancock, 1999; Landeen, Byrne, & Brown, 1995). Additionally, writing about experiences can enable students to recognize explicitly the knowledge that is implicit in their actions (Schön, 2001), helping to inform future reflection-in-action. Written reflections are also useful in improving communication, critical thinking, and observational skills (Guthrie & Jones, 2012), all of which are essential transferrable skills for university graduates from all disciplines.

Studies have also shown that reflective practice relies upon mentoring and support (Gustafsson & Fagerberg, 2004; Hallett, 1997; Mc Carthy et al., 2013; Pearson & Heywood, 2004; Teekman, 2000) and is more effective in small group situations (Mann et al., 2009; Platzer, Blake, & Ashford, 2000). Consequently, intentional and facilitated discussions of reflective experiences with peers and staff often encourage students to better reflect on their own thoughts and understanding (Guthrie & Jones, 2012).

While the ability to practice self-reflection is often considered important in graduates, there is currently a limited amount of information to guide educators in the development of effective reflective practice in their students (Mann et al., 2009). Additionally, reflective skills take time to develop as they are complex and cognitively demanding (Mc Carthy et al., 2013). Consequently healthcare educators need to be equipped with a variety of tools and strategies to facilitate reflective practice teaching (Epp, 2008; Mc Carthy et al., 2013). As a result of the scarcity of information about reflective skill development currently available to educators, an exploratory approach to understanding appropriate reflective practice teaching pedagogy is considered appropriate (Mann et al., 2009).

Methods

The Transition 2 University (T2U) Program

At our university, Learning Skills Advisers play a key role in academic skill development by working with teaching staff to integrate development of transferable skills into the curriculum. Students enter the university with a wide variety of life experiences and differing skill levels, challenging teaching staff to create curricula that develop transferable skills but which also provide additional learning for higher-achieving students. In our cohort of transitioning students the variation in skill level is particularly pronounced, as students enter into nursing degrees through a variety of pathways.

In order to help develop the transferrable skills of our transitioning students and consequently improve their academic achievement at university, staff from the School of Biosciences together with a team from the University Library designed a week-long transition course: the Transition 2 University (T2U) program. This innovative program integrated the teaching of content knowledge with authentic mastery experiences to effectively develop transferable skills (Ford et al., 2015). T2U was split into two parts with morning sessions covering a variety of transferable skills while the afternoon sessions addressed content knowledge (for full details of the design of the T2U program see Ford et al., 2015). We were previously able to

demonstrate that the transferable skills sessions were effective in building perceived self-efficacy in students and that this increased level of perceived self-efficacy persisted until at least the end of the first semester (Ford et al., 2015). In this paper we now expand our research by examining an innovative experiential teaching strategy used during the T2U program to develop the transferable skill of reflective practice.

Research Design

This paper describes a mixed-method research design incorporating both qualitative and quantitative data. In this study we analyze students' qualitative responses to pre-determined open-ended questions and examine data from a quantitative survey at the end of semester. All research described in this article was approved by the University's Human Research Ethics Committee.

Student Cohort

The T2U program was delivered across three of the University's campuses. While attendance was optional, all new nursing students were encouraged to apply to participate, irrespective of their entry pathway into their nursing degree. Limited resources meant that 120 places were offered. In total, 117 students registered and participated in the program, with 58% of students self-identifying as mature-aged.

Self-Discovery Teaching Approach

As reflection skills require practice to develop, we wanted to start teaching this skill as early as possible in the course. As a result, we incorporated opportunities for reflective practice from the very start of the students' study. We also decided that it would be most useful for students to learn about reflection through a method of self-discovery in which the students attempted reflections prior to being taught reflective practice theory. In consideration of data that show the benefits of journaling and discussion in developing reflective thinking skills (Epp, 2008; Guthrie & Jones, 2012; Stevens & Cooper, 2009), we decided that students would be encouraged to complete a reflective journal after each day of the program. Students were provided with reflective questions that provided semi-structured prompts for reflective thinking (see Table 1) together with an example of what the completed activity might look like.

The reflective journal template encouraged students to describe and evaluate their experiences through a series of reflective prompt questions rather than through a specific framework (such as the Gibbs Reflective Cycle, Gibbs, 1988). The reflective prompts

Table 1

Reflective Journal Prompt Questions Provided to Students at the Start of the Transition 2 University Program

Daily Journal Prompt Questions

What happened?
Discuss the situation (what activity were you doing?), the task (what specifically were you working on?), the action (what action did you take?), and the result (what was the outcome?)

How did this event make you feel?

What went well?

What could you have done better?

What have you learnt from this?

How will this information be useful in the future?

in the template were informed by Rolfe’s minimal model of iterative reflective practice (“what,” “so what,” and “now what”) (Rolfe, Freshwater, & Jasper, 2001). This was expressly done as it was felt that this would allow students to focus on their experiences rather than worrying about something that might be seen as academic content. We wanted students to become aware of the strength of using reflection in a wide range of situations rather than as a process that should be conducted only when difficult or negative situations arise. Consequently, we explicitly asked them to identify positive experiences (“What went well?”), as well as identifying areas for improvement (“What could you have done better?”).

Time was provided at the start of each morning’s session to discuss what the students felt they had learned from the previous day, as well as anything they found difficult. Students were expressly told that their reflections were private, and would remain so unless they chose to share them with anyone. Those students willing to share their reflections did so at the start of the following day’s workshops. These sharing sessions were conducted in a peer environment with points for further discussion highlighted by the staff member. As mentioned previously, research suggests that small group situations and effective mentoring and support better facilitate reflective practice learning experiences. Consequently, the workshop was designed so that there would be a staff-member-to-student ratio of no more than 1:25. Furthermore, the room was set up to promote peer learning by aligning the tables into small groups of 3-6 students. Discussions of students’ reflections in each day’s workshops demonstrated that the journaling activity encouraged students to make connections between personal experiences and the theory taught in class. The journals also helped students to identify their

own learning needs, which in turn encouraged students to actively seek answers to their own questions.

At the end of the transition program, the Learning Skills Adviser at each campus facilitated an interactive workshop about reflective practice. At the start of the session, students were asked to discuss the following question in groups: “Why have you been doing reflections every night this week?” After peer discussion, the groups wrote their answer on a handout provided by the facilitator (see Appendix A). It is important to note that when students were asked this question, they had not been explicitly taught anything about reflective practice or its importance in nursing practice. This activity was followed by an interactive discussion about reflective practice theory and its practical application to the nursing profession. This discussion covered the following three topics: 1) “What is reflective practice?”, 2) “Why is reflection important?”, and 3) “What are the key attributes and elements of reflective thinking?” At the end of the workshop students were asked to write a paragraph-long reflection about the T2U program on a second handout (see Appendix B). The questions served to prompt students’ self-determined understanding of reflection and the reflective process. Both the written responses were collected by the facilitators of the class and used for further research.

Qualitative Thematic Analysis of Student Reflections

We analyzed students’ written responses to the two reflective questions described earlier. The first question (“Why have you been doing reflections every night this week?”; see Appendix A) was answered in pairs or individually, and a total of 57 responses were collected

for analysis. The second question (“Write a paragraph-long reflection about the Transition to University program”; see Appendix B) was completed individually, and a total of 78 responses were collected.

We wanted to analyze whether our teaching practice evoked reflective skill development as a consequence. Skill development was therefore the principal phenomenon investigated. We applied a thematic analysis approach to assess the content of the reflective questions. All participants’ responses to the first reflective question were read in order to obtain a general understanding of the main concepts identified in each submission. Each reflective response was then analyzed to extract significant statements that directly pertain to a particular concept, and these concepts were organized into theme clusters. These theme clusters are therefore considered as expressions of the latent content of the reflective responses (Graneheim & Lundman, 2004). The participants’ responses to the second reflective question were analyzed to examine the extent of reflective thinking. This was done by examining the incidence of features such as description, self-analysis, self-awareness, emotional awareness, self-learning, and strategies or implications for the future in the reflective responses.

Credibility of the research findings was established through agreement among co-researchers (Graneheim & Lundman, 2004). Before data analysis both researchers bracketed their assumptions and preconceptions regarding the phenomenon under investigation. Both authors independently classified the theme clusters according to the steps described above. Following these two independent analyses, the two researchers met to reach a consensus by comparing the data and arriving at a mutually agreed upon set of themes. Quotes from the reflective responses are also included to further enhance the credibility of the research findings (Graneheim & Lundman, 2004).

Quantitative Data Analysis

This paper also describes the analysis of quantitative data obtained from questionnaires administered to all students attending a lecture in a compulsory unit of the undergraduate nursing course at the end of the teaching semester. The 3-page questionnaires addressed several aspects that had been covered during T2U (see Ford et al., 2015), but three questions specifically targeted reflective practice (see Appendix C). A total of 94 responses were received (38 from students who attended T2U and 56 from students who did not).

Data from feedback questionnaires were analyzed using the computer statistical program GraphPad and Microsoft® Office Excel® 2010. A Likert scale was used to classify responses as follows: Strongly Disagree = 1, Disagree = 2, Neutral = 3, Agree = 4, and Strongly Agree = 5. Results are presented as mean ± standard error of the mean. We determined statistical significance by conducting unpaired t-tests between responses from students who attended T2U and students who did not attend T2U. A p-value of less than 0.05 was considered significant.

Results

Development of Reflective Practice Skills Through Self-Discovery

As mentioned earlier, students were asked to discuss the purpose of the reflective activity each day and prepare a written response to the question, “Why have you been doing reflections every night this week?” (see Appendix A). A thematic analysis of the students’ written responses was performed, and several themes were identified (see Table 2). It is important to note that a number of reflective answers included multiple themes. Examples of significant statements for each theme cluster are presented in Table 3.

Table 2

Key Themes Identified in Student Reflections About the Purpose of the Daily Reflective Journal Activity (n=57)

Theme identified	Number of responses	Percentage of total number of responses
Consolidation of knowledge gained each day	52	91.2%
Identification of strengths and weaknesses	34	59.6%
Thinking about and improving learning	25	43.9%
Thinking about and understanding feelings	23	40.4%
Learning from experiences or mistakes	15	26.3%
Forms part of clinical reflective practice	14	24.6%
Recording or describing daily activities	13	22.8%
Learning about myself	7	12.3%
Preparation for future study	6	10.5%

Note: Most reflections covered multiple themes.

Table 3

Selected Examples of Significant Statements for Each Theme Cluster Identified in Students Reflections About the Purpose of the Daily Reflective Journal Activity

Theme identified	Example significant statements for each theme cluster
Consolidation of knowledge gained each day	<p>“Because I can consolidate what I already know”</p> <p>“To make us think about what we learnt during the day – consolidation”</p> <p>“To look back on the day and see what we have learnt”</p> <p>“To consolidate what has been learned during the day time”</p>
Identification of strengths and weaknesses	<p>“Gives a chance to understand my strengths and weakness”</p> <p>“To learn where I am doing well and where I need to improve”</p> <p>“To determine areas we need to improve and areas that are comfortable”</p> <p>“This is a helpful method to recognise my weakness and have a think about it so I can improve it”</p> <p>“To realise if we have any weaknesses around referencing/ researching etc. [and] to smile about the areas that felt easy to learn and/or enjoyable”</p>
Thinking about and improving learning	<p>“So that at the end of each day you take some time to really think about the classes that you had that day”</p> <p>“Think about learning experience and evaluate what has been learnt”</p> <p>“Reflections are good because it allows you to think about what you have learnt, why you have learnt it”</p> <p>“To think about what we have learnt, gives us the opportunity to ensure we understood all topics that were covered”</p>
Thinking about and understanding feelings	<p>“It provides an opportunity to release worry from a stressful day”</p> <p>“A way of getting our thoughts and feelings expressed. It’s highlighted the ups, downs, fears, insecurities, excitement”</p> <p>“To understand [my] fear about starting uni”</p> <p>“To get feelings down on the paper”</p>
Learning from experiences or mistakes	<p>“To learn from our experiences and mistakes and use this to put into practice during our course”</p> <p>“I learn through previous mistakes, and gain confidence through previous success”</p> <p>“To avoid making similar mistakes”</p>
Forms part of clinical reflective practice	<p>“Because we will need this skill as part of our clinical placement later in the year”</p> <p>“To practice as we do it during placements and once we start working”</p> <p>“To get into the habit of doing this skill on a regular basis throughout the nursing degree, especially in Clinical Practice”</p> <p>“To practice reflective thinking on situations that arise during your working life. You may come across circumstances during your working life that you may need to debrief to yourself”</p>
Recording or describing daily activities	<p>“It works as a summary of things you studied”</p> <p>“Reflections are noting down what we went through on each day”</p> <p>“To write down what I have done in T2U that day”</p> <p>“To have a clear picture or details of what [was] done on each day”</p>
Learning about myself	<p>“Take a critical look at myself and the way I learn”</p> <p>“To think about what works for my learning style and what doesn’t”</p> <p>“It highlights positive and negative experiences which enables a self-critique. In this way I can surmise how I can get the most out of my university experience and improve my learning”</p> <p>“So I can reflect and learn what I need to be a better student”</p>
Preparation for future study	<p>“To see how what we learnt can help us in the future when we start our studies”</p> <p>“It has helped me realize that the stuff I have learnt will help me when I study”</p> <p>“To have a bit of insight into what to expect before uni begins, to help be prepared and just feel more comfortable”</p> <p>“To make us think of how [the skills] will be useful in the future”</p>

A second written response (see Appendix B) was collected from students after discussing the theory behind reflective practice. Submissions provided for this activity were interesting as they showed that many students were beginning to write reflections that highlighted a range of aspects of description, self-analysis and evaluation, learning, and implications. These skills, however, were largely at a very early stage. While students were clearly reflecting on information and experiences they had been exposed to over the week, the depth of the reflections indicated they were still largely novices. This was not unexpected, however, as skill development involves repetition and feedback in order to occur.

Many of the submissions included opinions about the program such as, “I found the T2U program extremely helpful,” though these were often not then clearly justified. The majority of students (54%) included a description of what had happened during the program, for example “each day for a week we were presented with information and strategies for developing university-level skills”. Fewer students included aspects of evaluation (38%) or self-analysis (46%) in their reflections. Example statements for these aspects are, “Learning how to reference properly is probably the most important bit of knowledge learnt” [evaluation], and, “I have learnt that I could manage my concentration levels better by not working as many hours out of school time” [self-analysis]. Students often also focused on how they felt during the program (29%, for example “I found it frustrating at times”), demonstrating emotional awareness. A few students produced reflections which showed that they had reflected at a deep level both on the content of the program and their own development over the week. In the following quoted submission, we have identified within brackets some different aspects of reflection shown by the student.

My T2U week was broken into mornings with library staff working on study skills and then afternoons with lecturers and workshops [description of events]. I found the study skills extremely useful [evaluation], and the introduction to uni life helpful to override feelings of being overwhelmed and underprepared [self-analysis, emotional awareness]. My confidence isn't that strong, realistically, although I usually have a front to hide behind [self-awareness]. My confidence and 'how to' skills are definitely now a priority [evaluation] when I can now see that I am capable [self-learning], it's just about breaking issues/ assignments down into baby steps [strategies/ implications].

Evaluation of the Longer-Term Effectiveness of the Reflective Practice Teaching Strategy

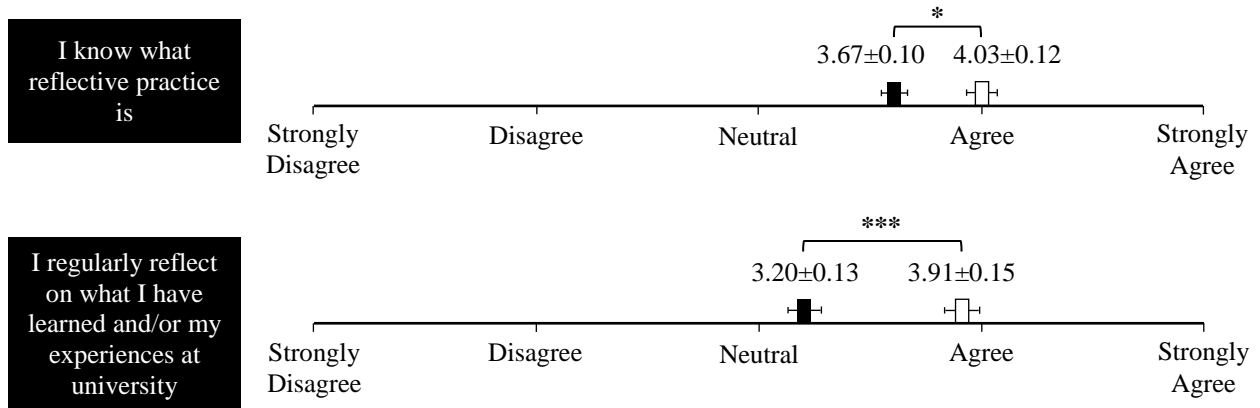
We also wanted to assess whether students continued to practice reflective thinking later during their first semester, after completion of the T2U program. All students enrolled in first-year nursing are taught about reflective practice through lectures and assigned activities within the first two weeks of their course. As a result it was important for us to determine whether there was a difference between the reflective habits of students who had completed T2U in comparison with those who had not participated in the program. This was done using an anonymous questionnaire administered at the end of the students' first semester. Three questions were specifically related to reflective practice (see Appendix C), and these were analyzed using a Likert scale (see Figure 1).

Attending the T2U program appears to have improved students' self-reported understanding of reflective practice, as well as their use of reflective thinking in their learning. In response to the statement, “I know what reflective practice is,” students who attended T2U were more confident that they understood the concept of reflective practice (4.03 ± 0.12) than those students who had not attended T2U (3.67 ± 0.10 , $p < 0.05$). When asked to respond to the statement, “I regularly reflect on what I have learned and/or my experiences at university,” students who attended T2U were much more likely to give answers suggesting that they use reflective practice in their studies than students who had not attended the program (3.91 ± 0.15 vs. 3.20 ± 0.13 respectively, $p < 0.001$). Students who had participated in T2U were also asked to respond to the statement, “I feel more confident about reflection and reflective practice after having completed T2U.” Of the 28 responses, 71% were positive (Agree: 13; Strongly Agree: 7) with an overall mean of 3.86 ± 0.18 .

Discussion

This paper demonstrates that students are capable of making meaningful and profound discoveries about the uses of reflective practice through exposure to the experience without explicit prior instruction, and many come to value the practice because of the benefits they discover. This is best seen in the themes students identified when asked why they had been completing a reflective journal each night. The three most common themes identified were consolidation of knowledge, identification of strengths and weaknesses, and thinking about and improving learning. It is interesting to note that many students independently identified that reflection helped them to contextualize the skills they had been learning and to appreciate their progress. Encouraging reflection on

Figure 1
Students' Understanding of Reflective Practice



Note. Attending the Transition 2 University (T2U) program appears to have improved students' understanding of reflective practice, as well as their use of reflective thinking in their learning later in semester. Results are presented as mean ± standard error of the mean. A Likert scale was used to classify responses as follows: Strongly Disagree = 1, Disagree = 2, Neutral = 3, Agree = 4, and Strongly Agree = 5. The white bars represent responses from students who attended the T2U program (n=34-36) and the black bars represent responses from students who did not attend the T2U program (n=54-55). * p<0.05 (unpaired t-test) and *** p<0.001 (unpaired t-test).

the students' learning assisted students in auditing themselves with regard to the skills required for success, making relevant changes to aid in their own skill improvement. This is important, as it is common in healthcare training for reflection tasks to be mostly confined to practical activities or placement rather than academic learning. Our results suggest that students can also obtain significant value from the practice of reflection on their academic studies (a concept we now term "reflection for learning").

Educational literature advocates for higher education institutions to help students foster their own personal epistemology. One way to foster students' understanding of their own learning is to help them develop their higher-order thinking skills. Reflective practice can be considered a higher-order thinking skill as it incorporates aspects of analysis and evaluation. Interestingly, our experiential learning approach appears to have increased the students' likelihood of continuing conscious reflection for learning later in semester. Furthermore, students were motivated to reflect on their learning without staff giving any instructions to continue this practice later in semester. This suggests the students decided to continue reflecting on their studies because of the benefits they

discovered for their learning, demonstrating an increased ability to apply self-regulation in their study approaches. For the purposes of this paper, we consider self-regulation to involve the ability to set goals and work to monitor, regulate, and control learning, as well as maintain motivation and engage in behaviors that lead to academic success (Lopez, Nandagopal, Shavelson, Szu, & Penn, 2013; Pintrich, 2004; Wolters & Taylor, 2012). Self-regulation involves the use of strategies that are considered metacognitive (Gourgey, 1998), and research shows that self-regulation is associated with increased learning and deeper understanding, overall achievement, and problem-solving (Azevedo, Moos, Johnson, & Chauncy, 2010; Plant, Ericsson, Hill, & Asberg, 2005; Sandi-Urena, Cooper, & Stevens, 2012; Schraw, Crippen, & Hartley, 2006).

This study also shows that instruction alone is not sufficient to develop reflective skills immediately. Reflections from students were still largely at a beginner level, with only a few students reflecting at a deeper level by incorporating aspects of evaluation, self-analysis, and self-awareness. This is important as teachers need to remember that students do not instantly become expert in an area after they have been taught a skill for the first time. Rather, teachers need to allow the students to

develop skills within their zone of proximal development (Vygotsky, 1978), providing learning experiences that are scaffolded to gradually build skills to allow students to move from novice to expert.

Some limitations to our study should, however, be noted. The information used to examine students' understanding of reflection and likelihood to practice reflection for learning was self-reported. Consequently, a degree of response bias is likely as results are based on the students' ability to self-assess their skill confidence. It has, however, been shown that students' ability to self-assess improves in situations that are not based on massed learning (Dunning, Heath, & Suls, 2004), as well as in situations where reflective practice is involved (Mann et al., 2009). T2U was designed to be conducted in small group situations and involved persistent reflective activities throughout the program. Furthermore, self-assessment is considered more accurate if there is an appropriate delay between learning the skill and conducting the self-testing exercise (Dunning et al., 2004). The follow-up questionnaires were administered approximately 11 weeks after the final day of T2U. Students, therefore, had a chance to practice their reflective skills throughout the semester and consequently have practical experience to assess their skills. We therefore believe that the self-reported data regarding reflective practice in the questionnaires are a reasonable reflection of students' skill confidence. It would also have been interesting to see students' clinical placement reflections, learning portfolios, and assessment grades to further investigate the depth of reflective learning which had taken place. However, the researchers did not have access to those sources for this cohort of students due to privacy restrictions.

It is important to note that while this paper demonstrates our experiences in nursing, we believe the innovative teaching approach is also applicable across many other disciplines. Reflective practice is considered a key skill in many professions as it allows professionals to improve their practice by allowing them to become more self-aware, identify further educational needs, and monitor their own professional practice. For example, reflective practice is considered a foundational skill for teachers, a variety of health professionals, and staff in managerial roles. Teachers often use this skill to reflect on different teaching strategies and past classroom experience to improve their future teaching, while healthcare practitioners use reflection to improve patient care by evaluating past clinical actions. Managers apply reflective practice skills to review workplace strategies and identify areas for improvement. Teaching practices that develop this complex skill can therefore be considered inter-disciplinary in nature.

Conclusion

We have shown that students are able to make meaningful deductions about reflective practice through use of a basic framework in which to self-reflect without explicit prior instruction. Importantly, we have demonstrated that students develop an understanding of the value of reflecting on their own learning without explicit instruction and that this metacognitive practice (termed "reflection for learning") was sustained until at least the end of the semester. We therefore propose that a self-discovery approach to allow students to realize the benefits of reflective practice is effective in developing reflective practice skills and engaging higher-order metacognitive strategies in order to promote self-regulated learning.

References

- Azevedo, R., Moos, D. C., Johnson, A., & Chauncy, A. D. (2010). Measuring cognitive and metacognitive regulatory processes during hypermedia learning: Issues and challenges. *Educational Psychologist, 45*(4), 210-223. doi: 10.1080/00461520.2010.515934
- Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory*. Englewood Cliffs, NJ: Prentice Hall.
- Boud, D., Keogh, R., & Walker, D. (1985). *Reflection: Turning experience into learning*. London, UK: Kogan Page.
- Braine, M. E. (2009). Exploring new nurse teachers' perception and understanding of reflection: An exploratory study. *Nurse Education in Practice, 9*(4), 262-270. doi: 10.1016/j.nepr.2008.08.008
- Burton, A. J. (2000). Reflection: Nursing's practice and education panacea? *Journal of Advanced Nursing, 31*(5), 1009-1017. doi: 10.1046/j.1365-2648.2000.01395.x
- Dewey, J. (1933). *How we think: A restatement of the relation of reflective thinking to the educative process*. Boston, MA: D.C. Heath.
- Dunning, D., Heath, C., & Suls, J. M. (2004). Flawed self-assessment: Implications for health, education, and the workplace. *Psychological Science in the Public Interest, 5*(3), 69-106. doi: 10.1111/j.1529-1006.2004.00018.x
- Epp, S. (2008). The value of reflective journaling in undergraduate nursing education: A literature review. *International Journal of Nursing Studies, 45*(9), 1379-1388. doi: 10.1016/j.ijnurstu.2008.01.006
- Epstein, R. (1999). Mindful practice. *Journal of the American Medical Association, 282*(9), 833-839. doi: 10.1001/jama.282.9.833

- Ford, A., Todd, P., Gleeson, D., Rossiter, I., Strous, M., Borutta, S., . . . Pretorius, L. (2015). Building perceived self-efficacy in new tertiary healthcare students by teaching transferable skills: the Transition 2 University (T2U) Program. Proceedings of the Students, Transitions, Achievement, Retention and Success Conference, 1-10, retrieved from <http://www.unistars.org/papers/STARS2015/01C.pdf>
- Gibbs, G. (1988). *Learning by doing: A guide to teaching and learning methods*. London: Further Education Unit.
- Gourgey, A. F. (1998). Metacognition in basic skills instruction. *Instructional Science*, 26(1/2), 81-96.
- Graneheim, U. H., & Lundman, B. (2004). Qualitative content analysis in nursing research: Concepts, procedures and measures to achieve trustworthiness. *Nurse Education Today*, 24(2), 105-112. doi: 10.1016/j.nedt.2003.10.001
- Gustafsson, C., & Fagerberg, I. (2004). Reflection, the way to professional development? *Journal of Clinical Nursing*, 13(3), 217-280. doi: 10.1046/j.1365-2702.2003.00880.x
- Guthrie, K. L., & Jones, T. B. (2012). Teaching and learning: Using experiential learning and reflection for leadership education. *New Directions for Student Services*, 2012(140), 53-63. doi: 10.1002/ss.20031
- Hallett, C. (1997). Learning through reflection in the community: The relevance of Schön's theories of coaching to nursing education. *International Journal of Nursing Studies*, 34(2), 103-110. doi: 10.1016/S0020-7489(97)00001-1
- Hancock, P. (1999). Reflective practice - Using a learning journal. *Nursing Standard*, 13(17), 37-40. doi: 10.7748/ns1999.01.13.17.37.c2582
- Hatton, N., & Smith, D. (1995). Reflection in teacher education: Towards definition and implementation. *Teaching and Teacher Education*, 11(1), 33-49. doi: 10.1016/0742-051X(94)00012-U
- Landeen, J., Byrne, D., & Brown, B. (1995). Exploring the lived experiences of psychiatric nursing students through self-reflective journals. *Journal of Advanced Nursing*, 21(5), 878-885. doi: 10.1046/j.1365-2648.1995.21050878.x
- Leung, D., & Kember, D. (2003). The relationship between approaches to learning and reflection upon practice. *Educational Psychology*, 23(1), 61-71. doi: 10.1080/01443410303221
- Lopez, E. J., Nandagopal, K., Shavelson, R. J., Szu, E., & Penn, J. (2013). Self-regulated learning study strategies and academic performance in undergraduate organic chemistry: An investigation examining ethnically diverse students. *Journal of Research in Science Teaching*, 50(6), 660-676. doi: 10.1002/tea.21095
- Mann, K., Gordon, J., & MacLeod, A. (2009). Reflection and reflective practice in health professions education: A systematic review. *Advances in Health Sciences Education: Theory and Practice*, 14(4), 595-621. doi: 10.1007/s10459-007-9090-2
- McCarthy, J., Cassidy, I., & Tuohy, D. (2013). Lecturers' experiences of facilitating guided group reflection with pre-registration BSc Nursing students. *Nurse Education Today*, 33(1), 36-40. doi: 10.1016/j.nedt.2011.10.020
- Mezirow, J. (1991). *Transformative dimensions of adult learning*. San Francisco, CA: Jossey-Bass.
- Moon, J. (1999). *A handbook of reflective and experiential learning*. London, UK: Routledge.
- Pearson, D., & Heywood, P. (2004). Portfolio use in general practice vocational training: A survey of GP registrars. *Medical Education*, 38(1), 87-95. doi: 10.1111/j.1365-2923.2004.01737.x
- Pintrich, P. (2004). A conceptual framework for assessing motivation and self-regulated learning in college students. *Educational Psychology Review*, 16(4), 385-407. doi: 10.1007/s10648-004-0006-x
- Plant, E. A., Ericsson, K. A., Hill, L., & Asberg, K. (2005). Why study time does not predict grade point average across college students: Implications of deliberate practice for academic performance. *Contemporary Educational Psychology*, 30, 96-116. doi: 10.1016/j.cedpsych.2004.06.001
- Platzer, H., Blake, D., & Ashford, D. (2000). Barriers to learning from reflection: A study of the use of group work with post-registration nurses. *Journal of Advanced Nursing*, 31(5), 1001-1008. doi: 10.1046/j.1365-2648.2000.01396.x
- Rolfe, G., Freshwater, D., & Jasper, M. (2001). *Critical reflection in nursing and the helping professions: A user's guide*. Basingstoke, UK: Palgrave Macmillan.
- Sandi-Urena, S., Cooper, M., & Stevens, R. (2012). Effect of cooperative problem-based lab instruction on metacognition and problem-solving skills. *Journal of Chemical Education*, 89(6), 700-706. doi: 10.1021/ed1011844
- Schön, D. (1983). *The reflective practitioner*. San Francisco, CA: Jossey-Bass.
- Schön, D. (2001). *The reflective practitioner* (2nd ed.). San Francisco, CA: Jossey-Bass.
- Schraw, G., Crippen, K., & Hartley, K. (2006). Promoting self-regulation in science education: Metacognition as part of a broader perspective on learning. *Research in Science Education*, 36(1-2), 111-139. doi: 10.1007/s11165-005-3917-8
- Sobral, D. (2000). An appraisal of medical students' reflection-in-learning. *Medical Education*, 34(3), 182-187. doi: 10.1046/j.1365-2923.2000.00473.x
- Sobral, D. (2001). Medical students' reflection-in-learning in relation to approaches to study and

- academic achievement. *Medical Teacher*, 23(5), 508-513. doi: 10.1080/01421590126488
- Stevens, D. D., & Cooper, J. E. (2009). *Journal keeping: How to use reflective writing for learning, teaching, professional insight, and positive change*. Sterling, VA: Stylus.
- Teekman, B. (2000). Exploring reflective thinking in nursing practice. *Journal of Advanced Nursing*, 31(5), 1125-1135. doi: 10.1046/j.1365-2648.2000.01424.x
- Vygotsky, L. S. (1978). *Mind in society: The development of higher mental processes*. Cambridge, MA: Harvard University Press.
- Wolters, C. A., & Taylor, D. J. (2012). A self-regulated learning perspective on student engagement. In S. L. Christenson, A. L. Reschly, & C. Wylie (Eds.), *Handbook of Research on Student Engagement* (pp. 635-651). Boston, MA: Springer.

DR. LYNETTE PRETORIUS is a Learning Skills Adviser at Monash University. She works with academics to integrate academic skills development and training into the curriculum. She also teaches at both undergraduate and postgraduate levels in a range of academic disciplines. Dr. Pretorius has qualifications in Medicine, Science, Education and Counselling, and her research interests include the scholarship of teaching

and learning, assessment, curriculum design, heart failure, and atrial fibrillation.

DR. ALLIE FORD is a Learning Skills Adviser at Monash University. She works with academics to integrate academic skills development and training into the curriculum. She also teaches at both undergraduate and postgraduate levels in a range of academic disciplines. Dr. Ford has qualifications in Astrophysics, Chemistry and Education, and her research interests include the scholarship of teaching and learning, assessment, reflective practice, transition, and curriculum design.

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Appendix C

The questionnaire used at the end of semester investigated various features of the T2U program (see Ford et al., 2015). The three questions that specifically addressed reflective practice are shown below.

Please respond to the following statements regarding your university studies:

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
I regularly reflect on what I have learned and/or my experiences at university					
I know what reflective practice is					

Please respond to the following statements regarding the T2U program:

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
I feel more confident about reflection and reflective practice after having completed T2U					