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THE PRACTICAL IN THEORY AND THE THEORETICAL IN PRACTICE: FACILITATING INTEGRATION IN TEACHING AND LEARNING

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Abstract

Introduction: The integration of theory and practice in student learning is a challenge faced by teachers in health science education, where the curriculum contains large sections of learning in clinical or fieldwork settings. Theoretical modules traditionally precede fieldwork modules with the assumption that theory prepares students for fieldwork. However, students report lack of confidence and struggle to integrate theory and practice. The findings of an action research study of the facilitation of theory-practice integration in health sciences education is reported in this paper.

Objectives: The objective of the study was to investigate the creation of learning opportunities that would result in improved confidence in clinical decision-making in fieldwork.

Methods: A qualitative approach with an action research strategy was used to execute the research.

Results: Using reflective diaries and real life problems can enhance the integration of theory and practice.

Participants: Third year occupational therapy students.

Setting: University of the Western Cape, community and school based facilities.

Intervention: Implementation of additional learning opportunities to integrate theory and practice.

Conclusion: Introducing alternative learning strategies to integrate theory and practice can improve the learning outcomes of students who follow professional degrees.

Key words: theory-practice integration; health science education; student learning.

Introduction

The integration of theory and practice in student learning is a challenge faced by lecturers in health science education, when the curriculum contains large sections of learning in clinical, practice-based or fieldwork settings (Morgan, 2006). Theoretical modules traditionally precede fieldwork modules, with the assumption that theory prepares students for fieldwork. However, students are not sufficiently prepared when they enter fieldwork. Students' difficulties with the integration of theory and practice are reported widely (Morgan, 2006).

There appears to be consensus that students need help with the integration of theory and practice (Carlisle, Kirk & Luker, 1997). Fealy (1999) reports

that a considerable amount of research and scholarly papers have been produced on the theory-practice gap; the causes of theory-practice disintegration and philosophical debates on the theory-practice relationship in nursing education. Educationalists in the health science professions have been debating theory-practice integration for decades (Morgan, 2006) and have tried various strategies to facilitate theory-practice integration. In nursing education for instance, one such a strategy has been the inclusion of clinical skills laboratories (Ker, Mole & Bradley, 2003; Bradley & Postlethwaite, 2003) where students practice clinical skills in a safe environment to equip them for the demands of practice. Some argue that practice-based learning is where professional development occurs (Koh, 2002; Spouse, 2001). Others argue that theory should be revisited during the learning of clinical skills in practice settings to facilitate integration (Morgan, 2006).

The background of this paper was a larger study in teaching and learning of a module in paediatric occupational therapy at the University of the Western Cape. An action research approach was used to investigate the author's own teaching practice and students' learning experiences in both the classroom and in community-based and school-based fieldwork settings. The drive for the study was the students' lack of confidence when entering fieldwork settings for the first time.

From the larger study, it emerged that the facilitation of theory-practice integration was one method that helped students to gain confidence in their practice abilities. The focus of this report is the strategies employed to facilitate the integration of theory and practice and the students' emerging abilities to reflect on their practice.

Theoretical framework

One of the theoretical approaches in understanding theory-practice integration is Carr's (1987) typology of the most commonly held positions of theory-practice integration in education. Carr (1987) describes four approaches: the 'common sense' approach, where theory is driven from the practitioner's understanding and insights; the 'applied-science' approach where theory is viewed as abstract principles applied to practice in order to guide practice; the 'practical' approach proposing practical wisdom and the art of deliberation, where theory is used to inform the practitioner of good, ethical and just practice; and finally, the 'critical' approach that attempts to merge the 'applied science' and the 'practical' approaches where theory and practice are viewed as interdependent and mutually constitutive. In this view, the theory-practice link is used as ideological critique of own practice through critical self-reflection.

Method

The method used was action research in the qualitative tradition. Action research is a method of educational inquiry in which action and practice, including the assumptions and beliefs that underpin the actions, are scrutinised for the purpose of deeper understanding with the intention that the outcome would lead to the improvement of practice. Waterman, Tillen, Dickson & de Koning (2001, p.11) define action research as *a period of inquiry that describes, interprets and explains social situations while executing a change intervention aimed at improvement and involvement, it is problem-focused, context specific and future orientated.* The change intervention in this study was the implementation of classroom-based strategies to facilitate the integration of theory and practice over a period of two terms of theoretical

modules, followed by 18 months of fieldwork practice where students kept structured reflective journals about their learning experiences.

The total population was 27 occupational therapy students in the third year class, 22 women and five men. The majority were between 20 and 23 years of age. Four students were older than 25 and the eldest was 39 years old. Seven students classified their race as African, one as White and nineteen as Coloured. Eight students stated that their first language was Afrikaans, twelve were English speaking, six were Xhosa speaking and one was a Sotho speaker. Three students were of the Muslim faith. The others described their religion as Christian. The final sample size consisted of three students from the class who volunteered as participants in the research over the ensuing 18 months period of fieldwork practice.

Data about the students' learning and teaching were gathered by keeping of journals of their learning experiences during the taught course, the author's own reflective journal, feedback from the students by means of evaluative letters and interviews based on a review of the students' learning journals. The data on student learning in fieldwork was gathered by their keeping journals of their experiences, videotapes of students' treatment sessions and interviews with students after they watched their treatment session and their written case work.

Implementation of action plans

The strategies implemented to facilitate the integration of theory and practice included an early introduction to real clients in the field with subsequent theoretical discussion around their observations; active learning of applied knowledge; the explication of frames of reference, models and theories as reasoning tools and the students' use of reflective journals during fieldwork.

One of the action plans was the introduction of clinical scenarios early in the theoretical modules, followed by active learning opportunities for students to explore theory through of practice. The students visited schools for children with special needs and viewed a treatment session by an occupational therapist providing intervention for a child with a disability. The treatment sessions were video taped and viewed by the students, once they were back in the classroom. The fact that the videotape could be paused at critical moments to discuss either an aspect of the child's behaviour, appearance or response, or the therapist's method of intervention, added to the facilitation of integrating theory.

Another strategy was a continual linking of the theoretical models, theories, or frames of reference used in paediatric occupational therapy to the practical situation. The introduction of frames of reference as a reasoning tool was derived from both androgogical and professional influences. One of the methods was to provide the students with a method of thinking, a structure for reasoning and reflection. The argument was that if students had a reasoning strategy to resolve their own questions when faced with a clinical dilemma, they would feel more competent and confident about their abilities. In fieldwork, change implemented was the introduction of written journal entries of the students' learning experiences. Some of their treatment sessions were videotaped in order for the students to view their own practice and reflect on it. The reflective discussion was audio taped for transcription.

Trustworthiness was established through employing procedures for ensuring credibility by prolonged engagement in the field for a period of two years during which persistent observation and recording of data occurred. Triangulation was obtained by using multiple data sources such as students' and lecturers' journals, video tapes of student's practical treatment sessions, audio taped interviews and student evaluations. Member checking was used to validate interview transcripts.

Ethical issues were around informed consent and permission for video taping of clients in schools. Informed consent for student participation emerged from ongoing discussion with the students about their learning and informed consent was obtained from the participating class of students. The three students who were followed during the fieldwork over a period of 18 months were volunteers from the class. Consent and permission to videotape in schools was obtained from the school principals, parents of the children and the Department of Education. In the community, informed consent and permission to video tape was obtained from the owners of crèches where the students worked and from the community itself via their Health Committee as well as from the parents.

Results and discussion

From deductive analysis around theory-practice integration, the following categories were identified as being facilitatory for the integration of theory and practice.

- Viewing real problems of real children as triggers to unpack theory;
- Active learning of applied knowledge and explicating theoretical frames of reference as a reasoning tool;
- Reflective writing in journals during fieldwork.

Viewing real problems of real children as triggers to unpack theory

The clinical scenarios of real children with disabilities provided a cognitive 'hook' for students to link newly developing knowledge to an observed clinical case. In addition, the clinical case served to stimulate motivation and a sense of inquiry for the student to resolve the questions that arose. It prompted them to learn about the effects of a physical, mental or sensory impairment on the child's practical functioning and about possible intervention strategies. The use of the clinical cases to trigger learning matched some of the androgogical principles underlying problem-based learning (Barrows, 2000 and Norman & Schmidt, 2000). Furthermore, it is in keeping with Morgan's (2006) reporting that theory-practice integration occurs when students engage in practice.

By seeing practice in action, the students had the opportunity to reflect on the links between theory and practice. The assumption was that the viewing of practice would stimulate inquiry and result in questions in the students' minds, thus creating a tension of wanting to seek answers. The video recording of that session served this purpose further by allowing scrutiny, discussion and the opportunity to use critical incidents for deepening understanding. For instance, one visit was to a school for children with epilepsy. The students encountered many children of various ages with epilepsy and had the opportunity to engage with the children in their classrooms. They observed an occupational therapist treating a child with epilepsy who was wearing a crash helmet to prevent injury to her head during a seizure. During the subsequent discussion in class, the wearing of the crash helmet appeared to be the critical issue around which the students could start to engage with the theory of a

particular form of epilepsy, the effects thereof on the child's development and daily occupations and what the occupational therapists was trying to achieve in the treatment session. The theory was made 'live' by referring to the actual child whom the students had seen at the school and subsequently analysed on video. Students could relate what they were learning in theory to what they were observing in practice. Morgan (2006) reports that student learning is enhanced by practice. The use of video material provided many critical incidents that were used to facilitate theory-practice integration. The following incident occurred while students were watching a video of a child with cerebral palsy at one of the schools.

The next sub-test consisted of copying geometric shapes. Z fared fairly well until she got to the diagonal lines. These she could not copy. I stopped the video and we discussed the developmental sequence in normal development of motor patterns, where children first developed movements in straight planes, followed by diagonal movement patterns resulting in rotation of the trunk. I alerted the students to the fact that the same developmental pattern exists in the development of visual-motor integration (Author's journal).

The clinical incident served as a prompt to unpack the parallels of integrated development between motor patterns and visual-motor integration and also where the particular part of development observed is situated within the developmental theoretical frame, thus facilitating theory-practice integration.

Bezuidenhout (2003) reports the importance of learning theory linked to a practice situation to facilitate theory-practice integration. Seeing real clinical cases during the visits, followed by discussion of the same scenario on video, helped the students to integrate theory and practice. The students could link what they were learning theoretically to the practice-in-action they were observing and could return to theory for solutions of questions that arose in practice. This finding is in keeping with the work of Norman & Schmidt (2000) and Barrows (2000) on the use of real clients as triggers for learning.

Active learning of applied knowledge and explicating theoretical frames of reference as a reasoning tool: Practising integration in the classroom

When the students were learning to plan intervention during the taught course, they used the observed, real cases of disabled children seen during the school visits to construct treatment programmes. The students were divided into small groups and as a group, collaboratively had to devise a treatment plan. Here, the theory of intervention was learnt through practical application. A video depicting the assessment of a child with a disability was viewed and the students collectively devised a problem list of the outcomes of the assessment. The student groups were then asked to prioritise the problems.

I moved around and engaged in conversation about the problems with various small groups. Most groups had difficulty in deciding where to start and to decide what the priorities were (Author's journal).

Of note here is how difficult it was for students to identify and make explicit the underpinning theory. Teachers assume that students will automatically make links between discreet bodies of knowledge and know which theories to apply when. Carlisle et

al. (1997:391) report a health science educationalist's reference to 'the quantum leap into practice' and the teacher's hopeful expectations that the theory will click into place.

We spoke about the central development of motor skills in the first year of life and concluded that this was the reason why, as occupational therapists, we always started with the motor control issues. The student groups were then able to continue solving the problem of prioritising the problems (Author's journal).

Integrating theory and practice occurred in this instance when students had to make decisions about the intervention and priorities of the client's problems. The engagement in the practical facilitated deep learning and integration (Morgan, 2006). The practical dilemma of where to start and how to reason triggered the deepening of understanding of using the theory, in this instance, the child development framework, as a way of organising knowledge for decision making. The theory of development was demonstrated in practice, echoing Morgan's (2006) suggestion that the repetition of theory during practice would facilitate integration.

Explicating frames of reference became possible when critical incidents were revealed during the observation of the children on the video. In one such an instance, the students were watching a video of Z, a six year old girl with cerebral palsy being treated by M, the occupational therapist.

M told Z that today she was going to learn to write the letter 'Z', the first letter of her name. She started the session with a large 50 cm high cardboard cut-out of the letter Z which she stuck down on the table in front of Z. First, Z was required to trace the shape with her pointed finger. Then she had to choose a coloured crayon and name its colour, which she could not do. She then traced the letter with the crayon and repeated it another time with a different colour. Next M placed a template of the letter Z in front of Z. Again, she had to draw the letter inside the cut-out, using different colours and naming them (Author's journal).

In this excerpt, the students saw a sequence of activities graded by complexity and designed to help Z develop the skill of copying a diagonal line that formed part of the first letter of her name. The developmental issue here was her inability initially to copy diagonal lines. To help the students to make sense of the significance of this event, and to help them to understand the bigger picture of the developmental frame of reference, students were subsequently required to plan and design a similar treatment session using other activities.

The purpose was for the students to understand the principles of grading, working from gross motor, using diagonal patterns, to fine motor, kinaesthetic, working with objects to working on paper. I explained again that in a fieldwork situation, one needed a frame of organising one's knowledge and that this frame assists students to make decisions of where to start and how to prioritise and how to grade treatment (Author's journal).

Theoretical frames of reference and models of practice were used to facilitate reasoning in the practical situation. Understanding of a frame of reference would ease the students reasoning and would facilitate the integration of theory and practice. In terms of Carr's (1987) typology of theory-practice integration, I was hoping to facilitate

the practical approach where a reasoning process and eventually a reflective process, would contribute to the confidence in clinical decision making.

Reflection to facilitate theory-practice integration in fieldwork

To facilitate theory-practice integration in fieldwork, students were provided with opportunities to reflect on their work. One strategy was to video tape a treatment session of the student working with a child, followed by viewing of the treatment session and the student discussing their practice. The discussion was audio-taped. Another strategy was the use of structured, reflective journals in which the students recorded their experiences of their work.

Classroom-based learning was followed by an 18 months period of fieldwork. One student's journal reveals an understanding of the theoretical constructs of the intervention. The student made frequent reference to the performance components underlying the activity choices. In some of her observations, she qualifies her interpretation by explaining what she saw and how the child responded by describing the underlying components.

To reach the page on the wall, especially the upper parts, H had to stretch and he got nice extension throughout his upper body. He was doing this with lots of effort however, and this could be seen in how he fixated his legs (Student's journal).

Furthermore, the student's writing revealed that her understanding of the underlying performance components was used in making professional judgements.

H had to go into the wheelbarrow position, pick up the instructed coloured discs and move to the other end to arrange them. This activity was used to improve his shoulder-girdle stability to get better dissociated movement of his arm, through weight bearing (Student's journal).

The fact that she analysed H's movements in terms of the underlying components achieved during the activity, revealed her understanding of the theory underpinning the practice.

Another student, revealed her developing ability of theory-practice integration in her understanding of the links between developmental levels and the requirements of the activity. In the following excerpt, she describes the response of a group of five and six year old children.

Their drawing, when I looked at it developmentally, it was more on a three year level, circular drawings; some children couldn't draw a person with clear distinction between the head and the trunk. Their body pictures would more look like a head and two legs, sometimes no arms present (Student's Interview).

The student reflected on the children's use of puzzles of the human figure and drew the conclusion that the reason for the children's struggling with the puzzle could be interpreted in terms of progression in development theory:

The puzzles were three-piece puzzles. One was the head, the trunk, and the legs. The other puzzle was the head and trunk in one piece and two legs separately. So I found that the children struggled more when the head was separated and when the two legs were separated. And I also thought maybe

for an introductory session, rather have that sort of puzzle with the head, with the trunk and with the legs, so that they can just put it together in a nice cephalo-caudal way, than from side to side, having two sides separately (Student's Interview).

She then elaborated on the developmental progression of body image and spatial concepts and explained that a vertical progression developed before a lateral progression and was thus easier for the children:

Because their first experience is from the head down, then proximo-distal (Student's Interview).

In the following journal entry, she described the children's response to puzzles of human figures and her analysis of what was happening:

Children had difficulty grasping the relationship of head to trunk and legs. One child left out the trunk piece and connected the head to the legs and I had to show on my own body how the body parts are connected. The way in which they built their puzzles coincides with their kind of pictures that they have drawn of themselves with a head and two legs or a head with lots of fingers and legs. Most of the children left out the trunk (Student's journal).

This entry revealed J's knowledge and understanding of the developmental progression of drawing and constructing human figures and illustrates J's developing ability to integrate theory and practice by reflecting on theoretical underpinnings of what is observed in practice.

Conclusion

These students' ability to integrate theory and practice became evident in their written work and discussions of their practice. The process of practicing integration of theory and practice early on during classroom learning appeared to assist students in applying these skills in making clinical decisions and professional judgements in practice. One student reflected on her feelings of competence.

I assessed my third child today. It went quite well and I was confident in administering the test. I started with treatment today. I felt quite confident because I knew what I wanted to achieve and I knew how to achieve it (Student's journal).

The student linked her confidence about emerging competencies to her sense of knowing what to do. The process of implementing classroom strategies appeared to have prepared these students with beginning skills with integration in fieldwork. The overall process that began in the classroom with early exposure to real clinical cases, the explication of frames of reference to provide a reasoning tool and active and collaborative learning resulted in many opportunities for reflection, discussion, debate and reasoning. Continual moving between the clinical reality and specificity demanded by individual children's needs and the underpinning theoretical constructs hopefully contributed to a deeper understanding of the impact of impairment and disability on children's occupational behaviour and on the learning of appropriate intervention. Once in fieldwork, students' journal entries further facilitated the moving between theory and practice and could be used to track their developing abilities.

Theory-practice integration can be viewed as an ongoing spiralling process that enables students to move continually between practice and theory, as their reasoning skills develops. Learning

opportunities can be constructed in such a way that students reflect on the practical when engaging in theory and reflect on the theory when engaging in practice.

Recommendations

The following strategies are recommended to facilitate the integration of theory and practice in the education of health professionals.

- Expose students to real clinical scenarios early in the theoretical modules and use the observations as a trigger to unpack the underpinning theoretical constructs.
- Use video taped professional-client treatment sessions for classroom analysis and application of theory.
- Explicate models, theories and frames of reference as tools for reasoning, thinking and reflection.
- Overtly emphasise process skills
- Encourage students to write daily reflective journal entries during fieldwork.
- Video tape students while they work with clients. View the video tape with the student and facilitate discussion around theory and practice.

Theory-practice integration is a challenging skill for students in the health sciences. Teaching methods that facilitate integration and multiple opportunities to practice the integration of theory and practice could assist students with the challenges of integration.

References

Barrows, H. S. (2000). *Problem-based learning applied to medical education.* Revised edition. Illinois: Southern Illinois University School of Medicine.

Bezuidenhout, M.C. (2003) Guidelines for enhancing clinical supervision. *Health SA.* 8, 45

Bradly, P. & Postlethwaite, K. (2003). Setting up clinical skills learning facility. *Medical Education Supplements,* 37, 6-13.

Carlisle, C., Kirk, S. & Luker, K. (1997). The clinical role of nurse teachers within a Project 2000 course framework. *Journal of Advanced Nursing,* 25, 386-395.

Carr, W. (1987). What is an educational practice? *Journal of Philosophy of Education,* 21, 163-175.

Fealy, G. (1999). The theory-practice relationship in nursing: The practitioner's perspective. *Journal of Advanced Nursing,* 30, 1.

Koh, L.C. (2002) The perceptions of nursing students of practice-based teaching. Nurse education today. 2, 35-43.

Ker, J., Mole, L. & Bradley P. (2003). Early introduction to interprofessional learning: a simulated ward environment. *Medical Education,* 37, 248-255.

Morgan, R. (2006). Using clinical skills laboratories to promote theory-practice integration during first year practical placement: an Irish perspective. *Journal of Clinical Nursing,* 15(2), 155-161.

Norman, G. R. & Schmidt, H.G. (2000). The psychological basis of problem-based learning. A review of the evidence. *Academic Medicine*, 67, 557-565.

Spouse, J. (2001). Bridging theory and practice in the supervisory relationship. Journal of Advanced Nursing 33(4), 512-522.

Waterman, H., Tillen, D., Dickson, R. & de Koning, K. (2001). Action research: a systematic review and guidance for assessment. Health technology assessment. 5, 23, Retrieved October 24, 2003, from http://search.epnet.com/direct.asp?