

Preparing undergraduate students to work effectively as practitioners in today's complex and diverse healthcare system represents an engaging curriculum problem. Critical to students' effective preparation are the pedagogical approaches used, how knowledge is transferred, the affordances offered to students and the ways in which students choose to engage in their learning.

Literature Review

The particular contributions of university experiences and clinical placements are usually described in terms of the university providing conceptual and procedural occupational knowledge and the clinical placement providing opportunities to blend these kinds of knowledge in ways that enhance the development of competent practitioners (McBrien 2006). For healthcare students, clinical placements are also particularly challenging learning experiences as they engage in direct patient care that may involve decisions regarding life and death (McDonough and Osterbrink, 2005).

Field (2004) proposes that the difficulty of skill transfer from one situation to another is most likely one of the 'root causes' of the purported theory-practice gap (p.562). Certainly, there are differences between the social and physical setting of universities and the settings where the clinical knowledge is practised, making the task of transferring or translating knowledge between these dichotomous settings crucial (Burke et al., 2005). Transfer of learning is defined by Mestre (2002) as "the ability to apply knowledge or procedures learned in one context to new contexts" (p. 3), such as from the university setting to the clinical workplace. There is a pervasive but misguided assumption that the knowledge learnt in the classroom will automatically transfer to other settings (Mestre, 2002), and the field of nursing is no exception (Griffin (1994) Meyer, Lees, Humphris & Connell (2007).

There is an enduring debate about the degree by which the transfer of knowledge is a problem of the setting or the individual learner. Certainly, for knowledge to be transferred it must be learnt in the first place. Some claim that weak transfer results from weak learning rather than an inability to apply the knowledge later or elsewhere (Mestre, 2002). Furthermore the context of initial learning is

critical in transfer because if the knowledge is too context-specific it may not easily transfer to other contexts (Mestre, 2002). For knowledge transfer to be successful it is essential that learning experiences transcend the setting in which the knowledge was created and used (Billing (2007). That is, those experiences must provide the basis for knowledge to be translated from one context into another.

Clinical placements offer students the potential opportunities to make connections between theory and practice in the workplace, facilitating the transition from student to competent graduate (Morgan, 2006). Yet, completing clinical placements does not guarantee students' professional practice will improve (Henderson et al., 2006). To secure effective development the clinical experiences likely require effective facilitation to achieve the learning objectives, including translation of knowledge. Opportunities for students to initially develop their skills in various techniques are provided in clinical laboratories (labs) in universities before they enter authentic clinical practice (Childs, 2002).

Opportunity for practice in clinical laboratories

Education providers responsible for managing a clinical lab or similar facility report that the laboratory is a vital factor in minimising the theory-practice gap for undergraduate students (Childs, 2002). Similarly, Freeth and Fry (2005) found that both nursing students and clinical lab tutors consider clinical labs to be environments that bridge the gap between theory and practice. In particular, students reported valuing opportunities to practice clinical and communication skills in a supported environment before performing them during their clinical placements, and would flounder without this experience (Freeth and Fry, 2005).

However, it seems that the prospect for translation is premised upon the congruence between the lab experiences and what is practised in the clinical setting as well as the sequencing of the placement relative to the university curriculum (Morgan, 2006). A further challenge is the fidelity of clinical

skills labs as nursing procedures require more varied and complex skills than can reasonably be taught in these university labs (Field, 2004). Despite the increasing technological sophistication of clinical labs, there are workplace learning experiences that Levett-Jones et al.(2006) suggest cannot be replicated in a classroom. These include communicating with patients and their families, managing competing demands and priorities and interacting with the larger healthcare team. Noteworthy here is that medical students report that learning through incorporating both bedside and clinical laboratory experiences is more effective than education that comprises an equivalent number of bedside education sessions alone (Junger et al., 2005). Furthermore, simulated clinical settings have been shown to assist the development of cognitive thinking and problem solving skills (McKenna et al., 2007), and permit students the opportunity to link their theoretical knowledge with clinical practice. So, it seems that finding ways of effectively combining these experiences stands as an important basis for securing the important curriculum goal of securing greater translation.

Securing the translation

Many students cannot understand, let alone translate, theoretical concepts from reading a text, unless they can relate it to experience. In a work-based social science degree, it was found that students reported they could see the relevance of the knowledge learnt through reading text books and attending lectures when they had the opportunity to practice it (Smith et al., 2007). As one student reported, when on placements it was possible to put their knowledge into practice and “it just clicks” (Smith et al., 2007, p. 138). Finnish pharmacy students also reported that their placements in community pharmacies enabled them to link their university learnt knowledge to their workplace activities (Katajavuori et al., 2006). These students reported that the theoretical knowledge became more concrete after being able to apply it in the workplace, and they valued the opportunity to test and monitor its application in authentic work tasks. Similarly, Henderson et al. (2007) found that mental health clinical placements provided an opportunity for nursing students to consolidate theory and translate their university learnt knowledge into practice. It follows that the ,

the degree by which clinical settings afford or make invitational these experiences is central to the quality of students' learning (Billett, 2006).

Supportive and invitational learning environment

Learning environments that welcome and actively encourage (i.e., invite) students' participation in patient care have been identified by graduates as important contributors to learning (Hartigan-Rogers et al., 2007). These experiences are contrasted to those where they are restricted to observational roles. Nursing students also report that a lack of active involvement in direct patient care inhibited their ability to achieve their learning objectives (Henderson et al. (2007)). Similarly, Finnish nursing students described a good clinical placement environment as one where they felt appreciated and were provided with appropriate opportunities to study (Papp et al., 2003). Graduate nurses recommend students actively seek out supportive environments in which they can actively engage in clinical activities (Hartigan-Rogers et al., 2007).

In nursing, practitioners acting as preceptors and mentors are pivotal in enhancing students' participation in learning activities during clinical placements. Students without an effective mentor may be denied opportunities to practice more complex tasks and, instead, find themselves repeating routine tasks in which they are already proficient (Spouse, 2001). The absence of allocated mentors can result in students spending significantly less time working with a qualified staff member and in education-related activities, and more time working unsupervised (Jones et al., 2001). However students' access to preceptors during clinical placements is particularly difficult when the preceptor is reluctant to engage in this role and with that student (Dolan, 2003).

A recent Australian qualitative study reported that over half of the 152 participating undergraduate nursing students reported not feeling respected or valued, were ignored and felt invisible during their placements (Curtis et al., 2007). Furthermore, students claimed there was a clear division between hospital and the university-trained nurses with the former complaining that the students did

not know much about “real nursing” (Curtis et al., 2007, p. 160). Moreover, nursing students also report a lack of support and confidence in what they have learned in university, when the practices differ from the way in which nurses on the ward perform the same skill. Further, if students questioned nursing staff (particularly older, hospital trained nurses) about the use of improper techniques, they were simply told that it was the way things were done on this ward (Cheraghi, Salasi and Ahmadi (2008)). Students reported that it was easier to conform to these ways of nursing practice, rather than challenge the nurses. Consequently, the students reported not being able to provide nursing care in the ways they were taught in the university (Cheraghi et al., 2008).

A supportive environment is not only associated with improved learning outcomes for students. Registered nurses and nursing managers reported that positive and supportive environments were those that contributed to the successful entrenchment and translation of new knowledge following participation in courses (Meyer, Lees, Humphris and Connell (2007)). Again, respondents reported effective learning only occurred once the skills were applied to practice. Indeed, Heaven, Clegg and Maguire (2006) have shown that upskilling nurses’ advanced communication skills in a simulated environment does not transfer to the workplace unless the supervisors are also receptive to new practices. Together these instances emphasise the importance of invitational workplace settings on the ability of individuals to translate newly acquired knowledge and skills into nursing practice.

It follows that students’ ability to translate the knowledge learned in the university setting into practice in the clinical workplace is shaped by both personal and social factors. These factors are located in university and clinical settings and impact on the richness of the learning experiences and the potential for translation between these two settings. A greater acknowledgement and engagement of these factors may facilitate the development of strategies to overcome these barriers and maximise knowledge translation between these seemingly parallel universes.

Aim

This paper reports on findings of a study examining students' learning across clinical settings. In particular, it explores the factors within the university and clinical environments that influence the transfer or translation of learning for undergraduate nursing students.

Method

Research Design

This project drew upon an ethnomethodological approach (Holstein and Gubrium, 2005) to investigate work and learning. It utilised both qualitative and quantitative methods, including individual interviews, surveys and field work observations. The analytic focus was on how individuals engage in learning within and across university and clinical settings.

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Sample

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Undergraduate student nurses who had elected to be in a particular clinical placement model were invited to participate following a presentation during a key lecture by the chief investigator across two campuses of a major university in Victoria. Twenty-nine second and third year students were recruited. Students ranged in age from 19 years to mid 50s and included 4 males. The project sample also includes 25 registered nurses and six Nurse Unit Managers (NUMs) working in 6 different clinical units and four site Directors of Nursing (DONs), although their responses are not discussed in this particular paper.

Ethical considerations

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Ethical approval was obtained from the participating healthcare organisation and university's ethics committees. Informed consent of all participants was obtained prior to interviews. Students were assured that neither participation nor subsequent withdrawal would affect their assessments.

Participants either created a ~~pseudonym~~ or were assigned a ~~pseudonym one to maintain~~ provide anonymity.

Data collection and analysis

A series of one-on-one semi-structured audio-taped interviews were undertaken with all participants over a period of two years. The first interview focused on the participants' work history and their participation in nursing, including their activities and engagements in the clinical setting. All data referred to in this paper is drawn from students' first interview during either the second or third year of their studies. These interviews involved encouraging the students to provide a narrative (i.e. story) of their work-study life to date, describe how they participate in clinical practice, and identify the factors shaping their learning experiences in clinical settings. Interviews were conducted at a time and place convenient to the participants (i.e., at the university following their clinical placement). All interviews were transcribed verbatim with a transcript being provided to the participant for validation at the subsequent interview. The interview transcripts were imported into NVivo-78 for analysis.

Data analysis

Initial analyses of the interview transcripts, combined with field work observations, revealed four central concepts that broadly focused on clinical practices as learning opportunities. These concepts are: (i) curriculum (i.e., the timing and sequencing of clinical placements), (ii) pedagogy - potentials (i.e., the opportunities available for learning), (iii) personal epistemologies (i.e., individuals' beliefs and values), and (iv) impact of workplace. These concepts are analogous to Billett's (2006) previous findings on learning through work. These concepts were used as a platform for analysis for

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initial coding and subsequently used to identify further categories (see Figure 1 for central concepts and categories). Several team members worked together coding the initial transcripts and a sample of coded interviews was provided to all team members to enhance inter-rater reliability. Consensus was achieved through a process of discussion about interpretations. Coding of each interview transcript was conducted by at least two researchers working together to ensure consistency and consensus in coding. The chief investigator was directly involved in all coding, working with one of two other research team members.

Using the NVivo 8 search functionality, two text queries were conducted to identify text relating to transference of clinical skills. Search terms included 'skills', 'clinical', 'labs', 'real/reality'. Thematic analysis from text queries run on the sub-categories of: unable to make connections, how students engage and doing nursing work, uncovered four aspects that appear to influence the transfer of learning (see Figure 1).

*** *Insert Figure 1 about here* ***

Findings

Through the coding of the data from the first interviews there was evidence of a patterning of responses about how the students reported the bases for and contributions to their learning and centred on individual learning preferences, issues of engagement and affordances, and the impact of the teacher. These responses are discussed in the themes below.

How I learn

Students' identification of their individual learning preference is the focus of this theme. It appears that being able to actively participate in clinical skills enhances their learning. For example, some students report a preference to learn through observation or hands on experience more than text book theory, as illustrated in the following quotes:

“I’m a visual learner so I guess by learning, like by actually seeing it, I learn a lot more” James (2nd year student).

Similarly, Elsie (3rd year student) identifies that: *“it is easier to learn things if you put them into practice instead of in theory. Like certain things in words you can’t really understand. Maybe we have to do it, like you know hands on with a real person”*.

This preference is illustrated by Zara (2nd year student): *“With the theory side to things it is a lot easier to relate to the bodily functions when you actually see what happens to the body in particular circumstances so it is easier to understand. At university it sometimes feels like everything is a blur and confusing...”*.

In these ways, the students report a preference for learning both procedural and conceptual knowledge through observation and engagement. However, these quotes also illustrate the process of translation: that the opportunity to practice allows them to translate what they have learnt in the university setting. Perhaps not surprisingly, given their previous practise-based experience, students who had prior nursing experience (Division 2 RN / Enrolled Nurse), also reported that the process of physically engaging in clinical work is critical to their learning, as illustrated by Miranda (2nd year student):

“I didn’t have clinicals because I am a Div 2, and it was all book work and class work and I don’t learn as well that way anyway, but I think it is really good to be able to get the hands on out there in the real nursing world” .

Whilst engagement in the clinical setting is essential to nursing students’ learning, the authenticity of the learning experiences offered was also important for the translation of learning from the university to practice setting. For some participants, this translation is manifested as a dissonance between their learning experiences in university and practice settings.

Lack of IssuesLack of engagement – it’s not real

The discord that students report in translating knowledge between the university and clinical setting is the focus of the second theme. That is, how students can engage in and translate activities across both settings. This theme centres on the students' experiences in the university clinical labs, in particular the perception that these labs are not perceived to provide clinically authentic experiences when compared with practise in a clinical setting. Subsequently, students frequently recounted that they did not actively engage with the learning opportunities offered in the clinical labs, as the quote below illustrates:

"...I think I learn a hell of a lot more on clinicals, than I do if I'm sitting in a lab at uni, mainly because it's so different and it's real life as opposed to pretend with the dummies in uni" Stef (2nd year student). Not only were labs perceived to be lacking in authenticity, the nature of the class size mitigates against them providing helpful learning experiences, as illustrated by Ben (2nd year student): *"... it's just the real thing the workplace. A lot of our labs here, there's too many people doing the wrong type of things. You're only there for a couple of hours and in the workplace you're there for longer and you're there to learn"*.

The clinical laboratories were also considered to lack authenticity because they do not replicate the kinds of interpersonal communication and interactions that occur with real patients:

"It becomes the real world... You're actually working with patients and listening to them talking to them and it's just not a piece of plastic block that you're pulling stitches out of" Anna (2nd year student).

This point is further illustrated by Ginger (2nd year student): *"People who are coming into the hospital are actually sick ... It's so different from being at school... In a lab you got dummies and stuff. Like for this person ... you're taking blood from and it actually would hurt... So it's the patients and it's the fact that you're handling real drugs that could kill someone and using real oxygen and you've got people with real symptoms"*.

This lack of authenticity impacted upon the way in which students performed clinical skills in the workplace, compared with their taught practice in the labs. Barriers to what had been learnt by these students were not limited to the university setting. The invitational quality of the clinical placement was also central to the translation of learning across these settings.

Lack of affordances

This third theme – issues of affordance - refers to the students' experiences in the clinical setting, in particular when nursing staff were indifferent to the students' presence and did not actively promote learning opportunities for them. Thus opportunities for students to engage in clinical activities were sometimes discouraged, as illustrated by Jayne (2nd year student):

“Oh I just don't like being in the way and if the vibe comes off that we are just in the way... it's really hard to even put your best foot forward because you think they don't really want us here”.

Similarly, Emma (2nd year student) claimed: *“Students just get ignored, the other day I was just hip and shouldered out of the way. I was doing a session and an anaesthetist came in and just took over and it was like ‘excuse me’”.*

These types of experiences perpetuated a sense of resignation within some students about the quality of the experiences they might be able to access in the clinical setting as Ellie, a student in her third year of study, suggests:

“often you may be stuck doing the repetitive tasks, and if you're not with a preceptor [registered nurse] who's going to push you or afford you an opportunity, you could be really good at bed making and showering patients and that's about it and get to the end of your placement and never having inserted a nasogastric tube or a catheter, because no one's taken the time to give you that opportunity or that experience”

The kinds and degrees of affordance offered by the clinical setting are important in providing opportunities for scaffolding or otherwise mediating the experiences that student nurses have had

elsewhere. (i.e. in the university). Its absence stands to limit the prospects for student nurses' learning. Further, the data suggests that the lack thereof, of the 'teacher' is another crucial factor in the translation of clinical skills and knowledge and is captured in the fourth theme.

Impact of Teacher Impact

The influence of the 'teacher', both formal (i.e., academic staff) and informal teacher (i.e., registered nurse), on students' engagement in learning was evident in the data. Students provided accounts of diverse learning experiences that emphasised the impact of these teachers, in both positive and negative ways. Students recounted positive interactions where the teacher engaged them in various activities and explained practices in detail. For example, Jayne (2nd year student) claims: *"I had a great preceptor who was really into me doing everything, and she explained it. I called her the nurse for dummies, cause she explained it really well, how some things are done"*.

This willingness to engage with students is further highlighted-illustrated by Stef (3rd year student) who identifies that effective informal teachers are individuals who: *"... are willing and who want to help you...are really happy to have a student with them, eager and friendly, and they have a passion for the job"*.

In contrast, some students experienced placements that had limited or unsatisfactory engagement with their assigned preceptors. This is illustrated by Zara (2nd year student) who counselled that: *"Make sure the preceptor has agreed to having a student and wants to have a student. My first placement at Hospital A made me feel like a worthless piece of s**t because she simply didn't want me working with her. The first thing she said to me was 'I prefer to work by myself so I don't know what you're going to do whilst you're here' "*.

This lack of engagement by more experienced nurses can impact upon students' translation of learning and presents in diverse ways-. Peter, a second year student reports: *"I know I've had a*

preceptor that's kind of taken over everything and made me more of a shadow, which I found was ineffective for my own learning". Students shared how this impedes on their learning as they are left to complete mundane tasks and are not provided with the opportunities to apply newly acquired clinical skills, learnt in their clinical labs, into practice in the workplace.

These examples exemplify some of the factors that impact on the translation of acquired knowledge into practice. In particular, the intricacies of workplace learning and the key role of individuals' dispositions (i.e. students, teachers, nurses) were central to whether or not the student nurses engage with the learning opportunities available to them, and the receptiveness of the workplace to students.

Discussion

Translating learning from the university into the clinical environment for undergraduate students can be problematic because of the distinctiveness of each of their social, physical and practice contexts. Findings in the present study replicate those of other studies (Levett-Jones et al., 2006, Smith et al., 2007, Spouse, 2001). Further, this study identifies three key barriers to knowledge translation that confront nurse education as structural problems, and possibly other health profession-based disciplines, where the preparation involves experiences across university and clinical settings.

Students in this study reported the importance of matching teaching methods with the learning preferences of students in order to expedite the knowledge transfer process. Students indicated that the clinical placements allowed them to contextualise the concepts and practices that they had learnt from reading textbooks and engaging in laboratory sessions. Whilst students acknowledged that the university-learnt conceptual and procedural knowledge was vital, it was not until they had the opportunity to apply this knowledge in a practical clinical situation that the translation to practice occurred. This outcome is consistent with the findings of Smith et al. (2007) who report that

students had difficulty understanding theoretical concepts until they put them into practice.

Similarly, pharmacy students identified that the theory became more concrete once they were able to apply it in the workplace (Katajavuori et al., 2006).

Although students are provided with opportunities to apply their practise knowledge and develop it procedurally in the university clinical labs, students in this study identified that such exercises lacked the authenticity of the real world of nursing. They reported these experiences lack authenticity because the students were unable to interact with patients as in the clinical setting; where they talked to them and listened to them. Central to students' learning is the manner in which individuals permit themselves to participate in the activities from which they learn, and are allowed to learn through participation. Hodkinson et al. (2008) argue that learning is socially embodied and is relational between the individual and the location of practice. An individual's learning are negotiated through the interrelationship of their values and the learning culture in which they participate. Indeed, the importance of a supportive invitational clinical setting in order to maximise learning opportunities cannot be underestimated (Billett, 2006). While there were examples of positive experiences, students shared several instances that reflected a sense of invisibility as a student and identified how this may impede their learning, for example being left to complete mundane tasks such as bed making. Without effective mentoring and active participation in direct patient care, students can be inhibited in their capacity to translate knowledge between the two settings and, consequently, the development of more complex skills and fail to meet their learning objectives (Spouse, 2001, Henderson et al., 2007). Whilst such tasks as making beds and showering patients are important aspects of providing nursing care and provide unique opportunities for interpersonal interactions, students do need to be able to expand their skill base and be challenged to apply new theoretical knowledge into practice. Learning, as Boud, Cohen and Walker (1993) suggest, "builds on and flows from experience: no matter what external prompts to learning there might be ... learning can only occur if the experience of the learner is engaged" (p. 8).

Central to students' engagement is the influence of those, who directly guide their learning albeit academic or clinical staff. Students encountered some very positive role models; nurses who sought to establish what students wanted to achieve, went out of their way to help students meet their goals and displayed enthusiasm and passion for nursing. In contrast, several students also encountered preceptors (RNs) who made it clear that they were not interested in teaching students and had been forced to take on the preceptor role. Ineffective preceptoring can lead to chance learning experiences by the student (Andrews et al., 2006) and a sense of disengagement by both practitioner and student. One cannot assume that all nurses are able to teach students, as this underestimates the importance of the preparation that is required to be an *effective* preceptor. Registered nurses may require appropriate training and support to provide the kinds of learning experiences student nurses' need, and they themselves feel competent to provide (Andrews et al., 2006).

Perhaps education providers and the clinical workplace need to work more closely together to maximise the learning opportunities provided to students (Levett-Jones et al., 2006, Andrews et al., 2006, Brammer, 2006). If so, consideration needs to be given to different models of clinical placements, to determine what works. The findings here only hint at the full range of issues and factors and their complexity that shape the prospect for translation of learning across two quite different learning environments. Further research is required into the integration of undergraduate health professional students' learning in the workplaces might be helpful.

The effectiveness of the workplace as a learning environment is predicated on ensuring that constructive feedback from both health care workers and students is facilitated. Establishing partnerships between academia and the healthcare industry could lead to collective work and shared responsibilities that can go some of the way to meeting the needs of not only the university and clinical staff, but most importantly the needs of health professional students.

Limitations

From the perspective of qualitative research, the sample size is substantial though this does not imply that the results are generalisable as the data was gathered from one university and thus may not be representative of students from other institutions. Being a self report study there is always the concern about social desirability effect in the responses and how informants wish to present themselves. This is in some sense off-set by the number of interviews over the 2 year duration of data gathering and the verification process employed. While some of the student participants were known to the chief investigator (CI), throughout the duration of the project the CI was in a research only position.

Conclusion

The traditional manner of conceptualising knowledge transfer is through the 'theory-practice' gap. Here, we have discussed the issue of the translation of knowledge across two distinct settings in which student nurses participate. Support is provided for students and trainees through nurse educators, preceptors or mentors to enable them to 'apply' their academic knowledge more effectively in the work environment. This approach views nurses as knowledgeable, but unable to apply their learning because of the impediments introduced by their own lack of work readiness. However, there is evidence of these two domains becoming as 'parallel rather than interdependent universes'. The learning experiences in university and clinical settings can create dissonance for students not because there is a 'gap', but because their natures, and hence the learning experiences they afford, are intrinsically different, their systems are in many cases co-existing, and sometimes opposed. Transfer, or translation as we have referred to it here, is inextricably linked with the individuals' learning preferences, the affordances the workplace offers to students, and the capacity of staff to provide exciting, engaging work-based learning opportunities. The challenge for health professional education is to provide a model of clinical education that allows students to operate in both universes, whilst enabling the student to integrate the learning from both experiences.

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