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The Curriculum and Pedagogic Properties of Practice- based Experiences: The Case of Midwifery Students

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Abstract This paper outlines curriculum considerations for the ordering, enactment and experiencing of practice-based experiences (e.g. practicums) in tertiary education programs developing occupational specific capacities. Increasingly, these programs are engaging students in practicum experiences (i.e. those in the circumstances of practice). These practice-based experiences require considerable investment on the part of all involved and so need to be used in ways that do justice to those investments. However, such experiences are often provided and engaged in by students without consideration being given to their educational purposes; their likely contributions and how they can be sequenced and utilised to achieve those purposes. Here, the specific concern is to identify bases for considering these purposes and how these might be realised through the selection and sequencing of student experiences. A case study of two practicum experiences comprising midwifery students' 'follow-through' experiences with birthing women and clinical placements is used to identify the kinds of learning that can arise through different kinds of practice-based experiences and how they might be most effectively organised. The concern, therefore, is to identify how the midwifery curriculum (i.e. pathways of experiences) can be ordered and augmented by particular pedagogic practices that assist realise the program's intended learning outcomes. The two different practice-based experiences are found to generate distinct learning outcomes for the students. The follow-throughs generate understandings about the birthing process from the birthing mothers' perspectives and provide goal states for midwifery work and understandings about midwifery practice, whereas the development of clinical capacities that arise through clinical placements. Consequently, the formers kinds of experiences might be best provides before, or in conjunction with second. Importantly, rather than viewing these experiences as being supplementary to what is provided within tertiary education institutions, they need to be consider as particular kinds of experiences on their own terms and engage with and utilise their contributions accordingly.

Keywords Practice-based learning · Occupational preparation · Sequencing of learning, Experiences · Curriculum practices · Pedagogic practices · Midwifery: healthcare

Curriculum and Pedagogic Worth of Practice-based Experiences

In countries with advanced industrial economies, tertiary education programs preparing graduates for specific occupations are increasingly using practicum experiences (i.e. those in the circumstances of practice) as elements of those programs. Whilst long-standing for many occupations, these experiences are now being introduced

across most occupational-specific programs in acknowledgement that learning experiences within tertiary education institutions alone will be insufficient to develop the kinds of knowledge required for effective occupational practice upon graduation. However, often these experiences are being provided through these programs and engaged in by students without sufficient consideration being given to their educational purposes nor how they need to be ordered, enacted and engaged with to achieve the desired learning outcomes (Billett 2009a). Here, the concern is to identify bases for considering these purposes and how these might be realised through the selection and sequencing of student experiences. This paper addresses the question of upon what bases should the organisation of practice-based progress. It does this by drawing upon the data from a study of the processes of learning and outcomes secured by midwifery students engaging in follow-throughs and clinical placement experiences to propose how curriculum and pedagogic practices might be used to understand and, potentially, improve these processes and outcomes. Students enrolled in the undergraduate midwifery program were required to complete 30 follow-throughs across their three-year midwifery degree program (Sweet and Glover 2011). Each follow-through entails a student becoming acquainted and engaging with a birthing mother through her prenatal, birthing and immediate post-natal phases. This engagement includes accompanying these women to their appointments with midwives, obstetricians, gynaecologists, nurses and social workers as circumstances dictated the need to engage with them. The students report that, overall, these experiences are generative of rich understandings of phases of the birthing process from birthing women's perspectives. However, these student-initiated and organised experiences are both time and resource demanding for them as they communicate with, attend meetings with and have interactions with birthing women across these phases, and are available to participate in birth procedures with minimal notice. These commitments continued when students were also engaged in their clinical placements. These placements comprise students engaging in supervised midwifery work in the clinical settings where these women have their checkups and examinations and, ultimately, give birth. This second kind of practicum experience, therefore, engages students with different sets of experiences including examinations of birthing women, monitoring their progress, monitoring the health of the foetus and, later, the delivery of babies, than the follow-throughs.

The concern here is to understand the potential benefits to students from these two kinds of practicum experiences for developing the capacities required for effective midwifery and how that preparation might be optimised. However, more broadly, the paper addresses curriculum and pedagogic issues through identifying the particular efficacies of distinct kinds of practicum experiences and how they might be best sequenced and organised. That is, this paper focuses on a framing focused on understanding the particular consequences for and efficient use of curriculum and pedagogic practices for practice-based experiences that are increasingly becoming a key element of tertiary education programs. Curriculum refers to the pathway of experiences – the course to run – that learners experience and are directed along when securing access to and learning the required knowledge, regardless of whether these pathways are in educational or work settings. Pedagogy here refers to the enrichment of experiences that promote and support learning. Included here is also the personal epistemologies that shape students' engagement with what they experience, and how and what they learn (Billett 2009b). The appraisal reported here draws largely upon an analysis of student midwives' interview data to identify whether the kinds of knowledge required for effective midwifery practice are reported as being

developed through both the follow-through and clinical practice experiences.

Like any kind of educational experience, the follow-throughs that are the central focus of this appraisal have their strengths and limitations. They are reported as assisting secure understanding of elements of the birthing process, thereby enabling students to be engaged with and critically appraise the impact of clinical interventions and communications with health care practitioners, and also furnishing the perspectives, needs and circumstances of birthing women, and in ways that would not be achieved through either university or clinically based experiences. Yet, follow-through experiences are largely premised on observational processes and are limited in their support for developing the specific procedures required for effective midwifery practice. Therefore, it is proposed that a sequencing of these experiences with initial engagement in follow-throughs and their gradual cessation as participation in clinical practices increases its efficacious. Hence, it is proposed that experiences assisting in building goal states for midwifery work, including critical perspectives, might well proceed before those that develop and hone procedural capacities (i.e. being able to perform midwifery roles). In making its case, the paper is organised as follows. First, having outlined what constitutes each of the practice-based experiences, this paper elaborates the kinds of knowledge constituting occupational capacities as a means of identifying the knowledge that needs to be learnt. Then, findings from analysis of student interview transcripts are used to appraise how these forms of knowledge and, therefore, their learning, can be made accessible through the follow-through and clinical experiences. These data are used to appraise curriculum and pedagogic properties inherent in follow-through and clinical experiences, by identifying their contributions to this learning. Finally, considerations are advanced about how learning through the follow-through experience can be sequenced and organised in relation to clinical experiences and integrated in the overall course provision.

The Follow-through Experience

> … we patchwork what will become our practice from all the midwives that we work with and some are great and some are not great and some we liked the things they do and others we think 'God I would not do that when I am out there, that's one thing I won't do.' (3rd year student 1)

As noted, the growth of tertiary education programs focused upon preparing students for specific occupations has brought high expectations that such programs will effectively prepare graduates to move smoothly into their selected occupation (Department of Education Science and Training 2002; Department of Innovation Universities and Skills 2008; Universities Australia 2008). Yet, it has also been realised that experiences in educational settings (e.g. universities, vocational colleges etc.) alone will be insufficient for developing students' capacities to make those effective transitions directly into practice. Indeed, there is a need to provide students with practice-based experiences, like the long-standing clinical placements in medical education, as these are generative of the occupational capacities required to effectively practice the occupation (Cooke et al. 2010). The evidence suggests that through engagement in authentic goal-directed work activities, the opportunity to observe and listen to more experienced practitioners, and opportunities for gradual engagement with occupational tasks are generative of many capacities required for effective occupational performance (Billett 2001). Therefore, perhaps buoyed by the situated

cognition movement of the 1990s, but more likely the concerns of employers, professional bodies and other influential stakeholders, there is now a growing requirement for practice-based experiences to be included in educational programs preparing students for specific occupations. Consequently, such programs usually now include one or more forms of practice-based experiences. Many of these experiences comprise supervised placements in settings such as schools, hospitals and social welfare organisations when preparing novice teachers, physio-therapists (Molloy and Keating 2011), nurses (Newton et al. 2011) and doctors (Cooke, et al. 2010). Some experiences even emphasise inter-professional work (Henderson and Alexander 2011) aiming directly to secure capacities to permit this kind of work to progress (O'Keefe et al. 2011). Across these kinds of experiences, students are usually supervised by more experienced practitioners when engaging in activities in circumstances where the professional practice is being enacted (i.e. practice settings). These experiences are consistently reported as being helpful in developing confidence, competence and specific capacities required for effectively practising the occupation beyond graduation. However, important curriculum questions remain unanswered about the optimum duration, kinds of engagements and levels of support associated with these kind of experiences (Sweet and Glover 2011), not the least because they are costly) arrangements (Billett 2011) for both institutions and students.

Yet, beyond supervised placements are other kinds of experiences providing students access to and engagement in occupational practice. These include work experience and job placements, which engage students in experiencing working life more broadly or authentic instances or aspects of practice through which they can develop the required capacities for their selected occupations. Indeed, this paper focuses largely on presenting and discussing data from a study appraising the curriculum and pedagogic worth of 'follow-throughs' that engage students authentically in learning about the occupational practice (Sweet and Glover 2011). As noted, these experiences comprise midwifery students engaging one-on-one with birthing mothers and providing a continuous point of engagement and support across the prenatal, birthing and immediate postnatal phases. One student informant suggested that through these processes, the student becomes an appendage to the birthing to engage in these experiences with 30 birthing women, which contribute to their midwifery registration. Learning experiences provided by the follow-throughs include those arising from the interactions and relationships with the women; those with whom the women interact, including midwives, obstetricians, and other health and social welfare agencies; and, not the least, the women's families. The scope of opportunities for learning is in some ways dependent on the willingness of the birthing women to have students involved during these personal and intimate processes and also the engagement the healthcare professionals extend to these students. These experiences provide access to a range of maternity care providers and, correspondingly, many learning opportunities for these students, albeit through a process largely comprising observation of the pre- natal processes. Yet, as noted, these experiences make extensive demands on students' time and resources as they have to organise, coordinate and attend a range of meetings and interactions with 30 women. It follows that it is important to identify the current and possible contributions of these experiences to learning midwifery. In the second and third years, the students also engage in clinical practicum experiences, under the supervision of experienced midwives. Hence, the kinds of learning secured through the follow-throughs as students shadow birthing mothers also have implications for their clinical experiences.

The students' learning is intended to be aided by a journal in which they report their experiences in each of the follow-throughs, and which are assessed by their teachers. Each report includes: i) an introduction to the woman and her circumstances, ii) reflection on the student's understanding of the woman's experience of pregnancy, birth and postnatal period and iv) description of how this reflection has contributed to the student's learning about midwifery.

Appraising Follow-through Experiences

The study whose finding are discussed here used accounts of midwifery students' experiences of follow-throughs and other educational processes during their program (Sweet and Glover 2011). Focus group interviews of current first-, second- and third-year Bachelor of Midwifery students elicited data about the worth of follow-throughs as a means to promote learning about midwifery. The informants comprised 14 students: 3 first-year, 5 second-year and 6 third-year students. Some informants reported having significant commitments outside of their study life, including family responsibilities, part-time employment and, as noted, the second- and third-year students were also engaged in clinical placements. The informants were at different points in their required follow-throughs, and demands associated with follow-through obligations were unevenly distributed. Whilst some students lived locally, others lived some distance from where their birthing women were located and had access to various forms of care. Not all students had their own transport and some incurred significant costs when attending to their birthing women. These costs included those for transport, and limitations to part-time employment. In addition, some students' engagement was contingent on family commitments (i.e. caring for their children, not being able to plan or have holidays because of impending births), because they had to be available to attend these births. So, appraisal of the worth of these experiences includes not only evaluating whether they achieve their educational purposes, but also whether the outcomes are commensurate to the students' investments.

Analyses of the interview data were based on conceptual themes associated with knowledge and learning. The interview transcripts were analysed to understand the likely learning outcomes from these experiences in terms of: i) the knowledge that needs to be learnt, ii) the efficacy of these experiences and iii) how they might be made more effective. The findings reported here are from two kinds of analyses. First, interview data about student midwives' experiences with follow-throughs are used to identify how they assist the development of the kinds of propositional, procedural and dispositional knowledge required for midwifery practice. Second, interview data are used to identify the curriculum and pedagogic qualities of these experiences and the epistemological qualities required for students' engagement with them. As advanced within cognitive accounts of knowledge and knowing, the kinds of knowledge participants reported being generated through the follow-throughs were aligned with the domain-specific forms of conceptual, procedural and dispositional knowledge as presented in Table 1, each of which has their own qualities and levels. Conceptual knowledge comprises facts, concepts and propositions that are statable: they can be declared (Glaser 1989). These are used to articulate the goals for occupational practice, elements of it and associations among those elements. Procedural knowledge is that which we use to achieve goals, whether physically with our bodies or through our cognitive processes alone (Anderson 1993; Sun et al. 2001). It ranges from highly specific procedures, such as taking a pulse, temperature or

blood pressure, through to strategic or higher forms of procedures that direct and monitor work performance, such as the selection and application of occupationally specific procedures. This form of knowledge also extends to what is referred to as tacit knowledge; that which arises through repeated practice and is enacted almost simultaneously and without conscious recall by expert practitioners (Eraut 2000; Reber 1993). This kind of knowledge or knowing likely arises through repeated opportunities and practice. This kind of development might not reasonably be expected in a program of initial occupational preparation. Dispositional knowledge comprises beliefs, values and attitudes associated with the occupation that direct our intentions and energies, for instance how individuals go about thinking and acting, and for what purposes (Perkins et al. 1993). Hence, dispositions have important roles in mediating the intentionality and energy in thinking and acting, including learning.

Each of these forms of knowledge have levels and hierarchies within them that are deployed when performing a domain-specific activity (e.g. midwifery). The forms of conceptual knowledge range from simple factual knowledge through to strategic

Table 1 The forms of knowledge underpinning occupational practice

Domain-specific forms of occupational knowledge	
Conceptual knowledge	– 'knowing that' (Ryle 1949) (i.e. concepts, facts, propositions – surface to deep) (e.g. Glaser 1989)
Procedural knowledge	– 'knowing how' (Ryle 1949) (i.e. specific to strategic procedures) (e.g. Sun et al. 2001; Anderson 1993), and also tacit procedures (i.e. those leant and honed)
Dispositional knowledge	– 'knowing for' (i.e. values, attitudes) related to canonical and instances of

forms acquired through multi-fold episodes of experiences and opportunities to identify causal links and influencing factors. So, associations among concepts are used when identifying problems or conditions and when evaluating or monitoring activities. For instance, a high level of blood pressure might be associated with other symptoms or conditions within patients, and competent practitioners need to be aware of a range of associations amongst a range of conceptual representations. Procedural knowledge extends from specific occupational tasks or activities, through to problem-solving in novel occurrences within the domain of knowledge. Values and dispositional premises shape how individuals conceptualise activities and interactions and then enact procedures. Yet, these different forms of knowledge are interdependent and enacted in unison when securing work-related goals. Conceptualising a task requires entertaining procedural and dispositional considerations as well as conceptual ones. Similarly, enacting procedures is directed by dispositions and informed by concepts et cetera. Recent accounts from cognitive science reinforce earlier suggestions that even the ways in which we represent these forms of knowledge in memory are multimodal and multisensory (Barsalou 2008). That is, how we represent and recall knowledge likely comprises all three forms of this knowledge, and in different ways within them. Hence, experiences developing associations amongst these forms

of knowledge stand as potentially productive means for securing them.

The analysis of the interview transcripts sought associations between particular kinds of knowledge and kinds of learning experiences. For instance: references about understanding, goal states, associations, and concepts were taken as being primarily associated with forms of conceptual knowledge; those about being able to do something, undertake tasks or achieve particular outcomes were taken as being primarily procedural; and statements about beliefs, interests, or empathetic qualities were taken as being about dispositions. Following this analysis, data informing how follow-throughs and other experiences were generative of these forms of knowledge were identified, in terms of them being curriculum, pedagogic and personal epistemological practices. In the following section illustrative segments of the interview transcripts are used to illustrate and elaborate the patterns of findings that emerged from across the body of interview transcripts.

Kinds of Knowledge Learnt

In overview, much of what was reported as being learnt through the follow-through experiences referred to conceptual, dispositional and some high-level procedural knowledge. This is not surprising as this learning is derived, in large part, through observation, rather than hands-on clinical practice experiences, most likely to generate specific procedural capacities. However, evidence of conceptual development, particularly for first-year students, was clearly stated. The follow-through experiences provide opportunities to understand the entire process of birthing, including its various stages and procedures engaged with throughout. Hence, important goal states which are essential for midwifery are reported as being learnt and in ways quite distinct from the learning achieved through teaching experiences in the university and clinical practicums. Spending time with these women and engaging with them as they met various practitioners across the birthing period (i.e. continuity of care) led to rich understandings about these processes. This conceptual development seemed strongest during the first year. These conceptual or propositional contributions included understanding the goal states towards which midwifery is directed (i.e. what needs to be done) at various stages along the prenatal phase. It also included facts, propositions, cause-and-effect associations for the birthing woman, and something of the breadth of understandings and bases for strategic actions that can arise through these experiences. Higher-order understandings and even strategic procedural considerations were also reported as being generated through these experiences. However, follow- throughs provided not only access to goal states (i.e. what needs to be achieved), but also insights about how procedures progress, and how the outcome of these procedures can impact upon the birthing woman. Hence, causal associations amongst concepts were identifiable as being learnt through these experiences. Much of learning also was aligned with dispositional factors, such as sensitivity towards the birthing woman, and students' sense of self as future midwives. These forms of development are now elaborated.

Conceptual Development

As noted, the follow-throughs provided students with access to something of the scope of midwifery roles, from the perspective of birthing women. This access includes attending to their physical and emotional needs, and awareness of factors influencing that well-being. It extends to how family, social and economic

circumstances shape that well-being and care for newborns. One student came to understand the difficulties a Bosnian woman faced through her husband's psychological problems arising from the conflict in their homeland. Concerns about her husband elevated her own anxieties, which impinged upon her psychological well-being. Understanding such a complex of factors and their impacts may not have been appropriated through university or clinical experiences. Indeed, the student reported that midwives just ignored the husband at their regular prenatal meetings. Unfortunately, his wife could not do likewise. Depth of understanding about the midwifery role was reportedly enriched by students engaging with birth-related concepts and having to identify associations amongst them. A first-year student reported one woman being anxious as her platelet levels were low and had heightened anxiety about the consequences of having a blood transfusion while she was pregnant. Although the birth was successful, considerations of these issues provided a rich scenario for the student to understand associations among such factors. So, rather than narrow procedural learning outcomes (i.e. how to do things – e.g. pelvic examinations) the follow-throughs assisted first-year students learn about the com- plexity, variability and person-dependant nature of the birthing process, and the consequences for midwives.

> …you're seeing the whole range of different models, different hospitals. You're seeing different approaches … when you're on clinical you're under the supervision of a particular person and doing things their way; you're not so woman focused. Whereas when you're sitting with a woman and hearing her comments before and after the appointments, then you're really looking at it from her point of view. (1st-year student 1)

> To see the women as individuals, to see how much difference continuity of care can make to a woman's care and outcomes, the trust and … – well the benefits in terms of labour outcomes and the length of labour; all those things. (1st-year student 1)

This conceptual development arose through engaging in ways that provided direct access to the processes, practices and consequences of issues for these women, including their reactions to the different kinds of appointments and interactions with healthcare professionals. For students, the potency of such experiences is founded in the ways in which humans represent knowledge in memory. That is how we acquire and deploy our knowledge in occupational practice is multi-modal and multisensory (Barsalou 2003, 2009). Hence, richly contextualised encounters and circumstances such as these are likely generative of robust representations of knowledge. These encounters provide sets of clues and cues that likely shape these representations and support their development through multi-modal means, which may also ease their re-cognition: subsequent application. Elsewhere, doctors are taught to recall particular conditions through remembering the patients in which they find these conditions to assist such recall (Sinclair 1997). Analogously, a first-year student reported:

> … you get to see the birthing rather than just read it in a book and we don't do much of that or we haven't yet talked about what happens in labour and that sort

of stuff. It's very exciting and they're all different. (1st-year student 2)

… when they take the placenta and this is this and we look for this because of this and this because of this and it's just then you know. When they do it the next time for the next birth you can look for that. …you can ask the textbooks and go through them. (1st-year student 3)

Because of these experiences and coming to understand the prenatal process from the birthing women's perspectives, the students came to make judgements about the worth of different models of midwifery care (2nd-year student 2). Those judgements extended to what constitutes 'good' and 'bad' practice. They can also lead to perspective transformations and developments. For instance, learning from feedback received through follow-throughs, a second-year midwifery student stated: "what your perspective might be at the time might change quite dramatically once you hear what she thought about it herself or how it's helped or not helped her. I think that has helped to improve how you communicate in the future" (2nd-year student 1). She continues,

They're teaching me about what's important with the caregiver, how little things can mean a lot to someone; the tone of voice. Someone came out saying ''I'm really stupid aren't I'' after some comments were made. A doctor had said ''don't be stupid'' when she'd asked about what a medication was – ''don't be stupid, I wouldn't give you something that would hurt your baby''; that kind of wording. So she didn't ask any other questions after that, she felt completely stupid.

While I hope I'd never say anything like that in the first place, the subtleties of women really taking in all the tonal things as well as what the words that are actually said. (1st-year student 1)

However, more than this 'new' learning and transformational insights, the opportunity for iterative learning of the kind associated with deepening conceptual knowledge also arose:

Every time you see them you learn something different and that just adds to like the big picture (2nd-year student 2 also analogously 2nd-year student 4)

This forging of associations and causal links likely deepens understanding and extends to a consideration of different perspectives, including, for instance, how a birthing woman might present herself when confronted by medical processes and practitioners.

… you've been seeing her for a while and she's been telling you how she's been feeling and they walk in and tell the midwife or doctor … they are feeling fine and you know … they've had a horrible day or how they're struggling financially or they've got kids up to here, there's often I think a discrepancy between information as well (2nd-year student 1)

Consequently, these kinds of experiences can be generative of understanding that goes beyond issues of medical care and physical well-being, and are those unlikely to be learnt through clinical and classroom-based experiences. So, as noted, follow-

throughs permitted students to witness interactions between the birthing women and healthcare systems, and in ways that may be difficult to otherwise secure. These experiences seem to be generative of a more global and also nuanced understanding about midwifery practice. This kind of development generates the kinds of metal models that Klein (1998) refers to as mental simulations, from which individuals can construct problems and solutions and then appraise the solution mentally before proceeding. In doing so, they also strengthen their conceptual links and associations amongst propositions that are central to the effective completion of complex tasks.

Importantly, learning during follow-throughs is largely by observational means. Yet, through engaging with these women over time and through a range of processes students are able to make explicit associations between cause and effect, leading to more nuanced and a deeper conceptual understanding of midwifery, and how the interface amongst the healthcare system, carers and birthing women plays out. Yet, this conceptual development overlaps with enhancing procedural capacities. Indeed, rich associations and strategic procedures come together in ways that make them inseparable.

Procedural Development

As noted, much procedural development arising through follow-through experiences is associated with strategic concerns and outcomes, which are sometimes claimed only to be learnable after specific procedures have been developed (Anderson 1982). However, follow-throughs are reported as providing access to a range of procedural factors and enactments that are not necessarily dependent upon the prior development of specific procedures (e.g. being able to observe the consequences of poor decision-making and communication). So, these students are developing higher-order procedural capacities associated with organising, managing and monitoring birthing women. Quite possibly, interactions amongst these higher-order strategic outcomes and the causal associations and linkages comprising conceptual development are informing this outcome. These interactions also provide bases to evaluate different approaches to midwifery through engaging with a range of birthing women who are accessing quite distinct models of care, and also practices of a range of midwives and other healthcare professionals.

> … it's obvious that the uni is pushing a continuity model. But, I personally wasn't convinced by it until I didn't have it, until we started placements this year and you can just see how different it is without continuity, like for example the new labour ward experiences are different as opposed to experiences with like the follow-throughs on labour ward. So, I definitely think that it reinforces the different models. (2nd-year student 2)

However, focussing too much on observational learning through follow-throughs is not helpful for developing the specific procedural capacities needed by midwives. This concern was accentuated more by second- and third-year students, possibly because by this point they were engaging in clinical experiences and their capacities to undertake specific midwifery tasks and roles were increasingly important.

> My learning is observational and with VEs [i.e. vaginal examinations] you just can't learn that observationally. (3rd-year student 4)

Indeed, third-year students referred to clinical placements being more effective for developing procedural capacities such as these examinations. These development of these kinds of capacities require opportunities to practice, refine and hone them (Anderson 1982; Sun, et al. 2001). Yet, time spent in follow-throughs at this point in the students' preparation worked against these opportunities. Clinical placements also afforded other contributions.

> … I learnt a lot more in the clinical placements than I do in follow-throughs because the appointments are so far apart that whatever skills you have back then, you really need to back it up within the next day, but you don't, not until, I don't know you might not have one once a week. The clinical placements are definitely the learning ground and the follow-through is more about relationships than about the learning process to me. (3rd-year student 3)
>
> It's just I find that clinical you're given more scope, more support and better feedback. (3rd-year student 5)

Although other third-year students concurred with these students' view, one also pointed to the purposeful interrelationship between the two sets of experiences. Again, given the need for both procedural and conceptual development and the different kind of experiences arising from the follow-throughs and clinical placements, such interrelations appear salient (as taken up below). Indeed, responding to even moderately demanding tasks requires both kinds of capacities (Sun, et al. 2001), and here identifiable contributions arose from both kinds of experiences:

> … what I do find is the skills I pick up in the clinical, I then am able to transfer into the follow-through student role, so if I've had a day when … I've been able to take lots of blood or do something and I've been able to get some more confidence up on that skill, then if I get an opportunity that I do that with the follow-through. (3rd-year student 5)
>
> I tend to approach my follow-throughs now very clinically … I might go and I do an antenatal appointment and I've learnt from doing the follow-through is, because I've got that relationship and I got the skills now especially in the third year. (3rd-year student 6)

One informant's statement captures well the distinctions between the two experiences for the students: the clinical experiences are more about being taught, whilst the follow-throughs are about learning. It is suggested here that whereas learning through observation and reading can be secured through students' efforts alone, the learning of procedures requires working alongside expert others who possess this knowledge and can guide novices accessing that knowledge (e.g. Rogoff 1990). Certainly, some of the skills development for midwifery may well require this kind of guidance, that is, opportunities to practice and be guided in that practice. Indeed, these were identified as being some of clinical placements' qualities that were absent in follow-throughs.

Dispositional Development

The focus groups data indicate the follow-through experiences assisted in

learning some processes and outcomes comprising midwives' work. These legacies included securing a sense of worth about this work and it being held as personally important and socially productive. This valuing of the occupation in which these students are engaging is of the kind that leads students to associate it with, and assent to it becoming, their vocation (Hansen 1994). It seems that how individuals identify with a particular occupation is central to how they participate in it, learn more about it (Billett et al. 2005), and deem it worthy of becoming their vocation.

> That was hugely rewarding actually to see the babies much older and to hear how things have gone over time. That's not normally part of the experience, but that was a bonus. (1st-year student 1)
> I'm learning what a midwife's job really is because I came in with all my ideas and as a woman excited about birth in the community, I'm now learning what a midwife does so I wanted to become a midwife but now I'm actually seeing what midwives do having not had kids of my own. I'm actually seeing what they're doing with their work which is a big – it's a new experience and it is different from class learning. (1st-year student 2)

Consequently, the data and findings presented above suggest that follow-throughs were generative of a range of knowledge required for effective midwifery practice. This knowledge was often conceptual in kind, but extended to the development of strategic procedures and dispositions that are central to midwifery practice. However, this learning was quite distinct from what arose through clinical placements, because the activities and interactions are different, and the positioning of learners is quite dissimilar across these experiences.

Pedagogic Worth

Considerable pedagogic worth was also attributed to follow-throughs. Overall, they were valued for permitting the students to understand the phases of the pre-natal and birthing process and how decisions about support or treatment impacted upon that process. They also specifically augmented understanding the birthing process and appraising the potential impact of interventions by healthcare and other interlocutors. Hence, these experiences assisted students in understanding the effect of behaviour and decision-making by healthcare professionals upon birthing women per se, as well as the impact of poor practice. For instance, as one first-year student reported:

> She had an emergency caesarean and the baby was taken away for 24 hours and she said she had cracked nipples, bleeding nipples. So you can sort of see how decisions, even though she went through the midwifery group practice, that they went home after a 24 hour labour and then the staff took over and no-one talked about maybe expressing milk. You can sort of see how within the system a whole lot of – how one decision can lead to a whole lot of others. (1st-year student 1)

However, as noted, the follow-through seems to focus mainly on conceptual development, rather than the development of the procedural skills required for

midwifery tasks.

> … it's not so much about the skills with follow-through I don't think because you don't always get to have hands-on experience whereas if you're on a placement that is all you do, that's hands-on, they throw you into everything. Whereas with the follow-through it just depends on the person. (2nd-year student 5)

Also, follow-throughs are variable learning experiences. Students referred to them as being different from year to year, from midwife to midwife and from woman to woman. Yet, this variability did not always lead to diverse understandings, particularly when these differences inhibited the students completing the required number of follow-throughs. What was experienced was dependent upon the birthing mother's model of care and who was providing it. The students reported that if the women were under obstetrician care, students were likely only to be passive observers during any clinical process. However, if the women were under midwife care, depending upon the particular midwife's disposition, students may (or may not) get a greater kind and level of engagement. Yet, consistently, third-year students were increasingly critical of the efficacy of follow-throughs, claiming that by that point in their development, clinical placements were more effective for developing their ability to perform midwifery tasks. In addition, the amount of time and resources they had to commit to follow-throughs at this point in their development was held as generating negligible returns.

However, as midwifery students progress through their preparation, it was likely to be far more important for them to be able to perform specific midwifery procedures (i.e. midwifery skills), be accepted by their co-workers as being worthwhile and be able to progress further with their preparation. That is, through demonstrating specific procedural capacities, they were likely to be given increasingly more demanding tasks in which to engage, which is the pattern of practice-based curriculums (Jordan 2011; Lave 1990; Pelissier 1991). It follows, therefore, that an important consideration for curriculum and pedagogic practice is the sequencing and ordering of students' experiences so that their diverse contributions can permit the students progress towards greater engagement in the practices' activities.

The Curriculum and Pedagogic Practices of Follow-throughs

Quite consistently, the interview data suggest follow-throughs are important for midwifery students at the beginning of their preparation, and for the reasons set out above (i.e. developing understanding about the scope, nature and breadth of midwifery practice). This conclusion was captured well by a student's response to the interviewer's question:

> … which do you think you'd learn more from, being with a woman for that appointment or being in class?

The second year student replied:

> first-year being with a woman, second year being in class. (2nd-year student 1)

However, this student and some other second-year students still reported understanding further through participating in subsequent follow-throughs. Yet, like the third-year students, they questioned the benefit of doing so many. The second-year student quoted above reported learning a lot about normal limits of blood pressure, haemoglobin et cetera from repeatedly engaging in follow-throughs. However, she questioned whether it was necessary to do 30 of them to develop this kind of understanding. The third-year students, quoted previously all suggested clinical placements were more helpful for them at that point in their development. That is, they now needed to know how to enact specific procedures and participate in healthcare settings where midwifery was practised. One referred to how students were positioned in follow-throughs: seen as being 'an appendage of the birthing women', rather than being an appendage of the midwife (3rd-year student 3). Hence, it was more helpful for them to be immersed in the practice of midwifery, working closely with other midwives and associated healthcare professionals and come to know the circumstances in which midwifery is practiced. In the follow-throughs, students developed relationships with birthing women that are beneficial in their early development as a midwife, however in clinical placements the students were enabled, through their capacity to practice, to develop collegial relationships with midwives and the heath care team as a professional. Third-year students pointed to the problems and potential embarrassments when they lacked adequate skills, and made errors or came up with incorrect diagnoses. Incorrect vaginal examinations (i.e. assessing degree of dilation) was cited as something that caused a loss of face for students, and given its intrusive nature, potentially caused unnecessary interventions and embarrassment to birthing women. These kinds of capacities, the students suggested, can only be learnt through extensive clinical experiences, including being guided in acquiring this knowledge and having the opportunity to develop productive working relationships. Further, third-year students also proposed that their sequencing of learning would have been aided by knowing how to undertake basic procedural skills (e.g. how to take blood pressure) before engaging in either follow-throughs or clinical placements and also possessing a more complete set of concepts to prepare them for what they encountered during both experiences. So, readiness to engage in these experiences is a concern here.

In terms of curriculum considerations – the track along which to progress – it seems that the follow-throughs are experiences that are most essential earlier in midwifery education, yet would still likely need to overlap with students first clinical placements, and subsequently be less a part of the midwifery preparation in their third year. Added to this is the burden of the demand upon the student midwives of completing 10 follow-throughs in each of the three years of their preparation.[1] Currently, the demands can lead to quite strategic actions by the students, who are becoming increasingly time jealous (Billett 2011).

> All of a sudden you're reading through your portfolio and you realise you've only got 60 postnatal visits or … I've only got 15 births, okay, I need to try and change my follow-through experiences, I need to expose myself to midwives and to the women, but I'm going to get whatever I need to get. So my follow-through, all second and third pregnancies, no primips and I'm going to find recruitments later in pregnancy. (3rd-year student 4)

Also, the pedagogic devices used to enrich the follow-through process and make it fit the requirements of a higher education course (i.e. write-ups and reflective logs) likely also lose their potency over time. Further, some students referred to minimising the details of the write-ups and preparing their reflective logs in ways that met the expectations of those marking them rather than what they actually experienced. However, more positively, a first-year student also reported the value in being able to discuss what she had experienced with their teachers as a means of securing greater understandings from both follow-through experiences and her reading of texts:

> I've done all my readings and I'm a bit of a textbooker, I have my nose in everything. But when I come to class and talk to Abby and Sarah they're giving us their midwives' perspective so this is what happens for us, this is our experience, we saw this, we saw that. That is one step closer to feeling like we're seeing midwifery because it's their firsthand experience, but then to be at the follow-through experiences its firsthand. (1st-year student 2)

Such support seems particularly pertinent when students are engaging in work-intensive learning environments, such as the healthcare facilities where they accompany birthing women during the follow-throughs. Sometimes, such work settings are too busy or it is perceived as inappropriate to ask questions. Hence, tutorial group meetings or peer-organised activities offer such opportunities for sharing.

> … you can go and ask them things so if I'd seen something at a birth that I just don't understand and it's too busy to ask the midwife at the time so what does this mean or why did this happen? Everyone else joins in as well. (1st-year student 2)

Indeed, it was suggested by second-year students, regarding the lack of a formal process referred to above, to utilise fully the follow-through experiences and to assist the process of individual and peer reflection and sharing: "it's very much just up to yourself to kind of think, well what have I learnt from watching, what do I want to get out of it" (2nd-year student 2). Then, as noted, third-year students suggested being better prepared before they engage in clinical settings or follow-throughs. That is, they require a range of basic procedures (e.g. how to take a blood pressure) and a wider range of understanding to both engage in and learn during these experiences. Similar findings arose in a recent inquiry into how to integrate experiences in practice settings, suggesting the need for pedagogic practices that prepared students prior to their practicum experiences (Billett 2011). These kinds of pedagogic practices were referred to as being helpful when they exist and missed when absent. Hence, the combination of experiences was particularly helpful for this first-year student. In sum, opportunities to experience authentic circumstances, to read and develop an understanding from authoritative sources and for those nascent understandings to be augmented by discussions with more experienced counterparts were all and collectively proposed as being informative.

1 Recently, the number of follow-throughs required by the registering agency has been reduced to 20.

From these findings the sequencing and organisation of these two sets of practice-

based experiences need to be revised so that follow-throughs are more predominant in the first phases of midwifery student development and are slowly phased out as the students commence clinical placements, as depicted in Fig. 1. Whilst follow-throughs are essential experiences early in midwifery students' development, later clinical placements come to play a more important role and students' time and energies should best be directed towards engaging in this kind of experience, to the exclusion of follow-throughs.

Having considered some curriculum and pedagogies issues, it is now appropriate to consider those associated with students' engagement in these and other kinds of experiences.

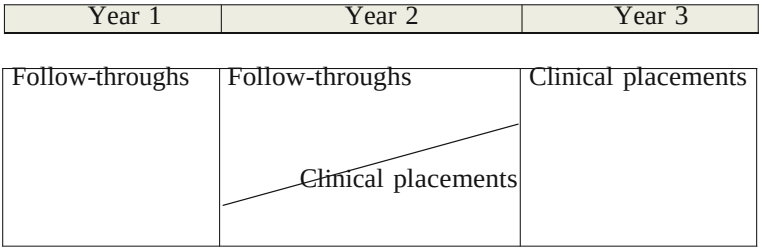

Fig. 1 Ordering and sequencing of practice-based experiences in midwifery education

Personal Epistemologies Including Ontogenetic Ritualisation

As captured well by references to students being engaged in learning during follow-throughs and taught in clinical placements, these experiences require students to be active learners. Individuals' learning in such circumstances is predicated on their personal epistemologies (i.e. the basis upon which what they know, their intentionality and energy directed towards their learning). These epistemologies are particularly central to the relatively independent processes that comprise learning through follow-throughs, and to a lesser extent the clinical and classroom experiences. Indeed, the data provided instances of students engaging their personal epistemologies intentionally and effortfully. One student reported how upon encountering something unknown to her (i.e. a bicornuate uterus) she then independently investigated it.

> I had a follow-through with a bicornuate uterus. So sort of things that I wouldn't learn at this stage stick in my mind, because I then go and look it up. So I think it's a great way of tying everything together and seeing it in a real life situation. (1st year student 1)

So, having experienced something and needing to understand more about it led her to study independently and develop knowledge about it. Whilst this kind of need is a well-known and discussed phenomenon variously described by Piaget (1968) as overcoming disequilibrium (von Glasersfeld 1987) and by Van Lehn (1989) as securing viability and the sociologist (Giddens 1991) as ontological security, this student felt pressed and personally directed to reconcile what she was encountering. Second-year students also referred to significant independent learning when commencing clinical placements, and effortful engagement, and a requirement to continually look things up to understand what is being experienced. This engagement is also reminiscent of what Ericsson (2006) refers to as deliberate practice: when somebody learning about something engages deliberately in process of active learning, rehearsal and honing their occupational knowledge. Yet, for these students, who also wanted to be accepted within the work settings, there was the added motivation for actively securing professional sense of self. As this first-year student suggests:

> … seeing this woman go through this experience and going back and looking up things in books. You don't need someone telling you to go and look that up. It's just through trying to understand what's happening, so that the next appointment if I'm asked something, I don't look completely stupid. (1st-year student 1)

This exercise of students' personal epistemologies in making decisions about the worth of what they experienced, what they take as positive and negative models, and what guides and directs their emerging practice was captured well by a statement made by a third-year student.

> … we patchwork what will become our practice from all the midwives that we work with and some are great and some are not great and some we liked the things they do and others we think God I would not do that when I am out there, that's one thing I won't do. (3rd-year student 1)

Yet, students' personal epistemologies can also direct their activities quite pragmatically. For instance, the demands of follow-throughs, when students were also engaged in clinical placements, required significant sacrifices by these time-jealous students. The students reported becoming strategic about the kinds of birthing women they wanted to engage with and finding ways of easing the demands of these engagements, to complete the required number of follow-throughs. Students recalled instances of their time being wasted, the needless expenditure of their resources and sacrifices made that extended to their families and partners, which were not adequately compensated for by the benefits of follow-throughs by this stage in their preparation. Hence, they became very strategic when engaging with follow-throughs. Certainly, the issue of time jealousy seemed to increase across the program as the routine aspects of follow-throughs (e.g. regular meeting with doctors) became time intensive and generated very little in way of learning.

The enactment of personal epistemologies also illuminates how these students came to participate and learn from others: referred to here as ontogenetic ritualisation (Tomasello 2004),[2] that is, how individuals learn to negotiate their way of engaging with others. This is a salient facet of midwives' work given the sometimes intrusive nature of physical examinations, and during a very important time for childbearing women, and yet is sometimes associated with anxiety, uncertainty and concerns about the health of their baby. The follow-through experiences assist develop an understanding about these capacities in ways that university-based experiences and also clinical placements are unlikely to achieve.

> … especially with shift changes I go out of my way to introduce myself and say I really like to learn, I love to ask questions. If that's going to bother you or hinder you in your work just tell me to wait a minute but otherwise I will take advantage of you being here because I really want to learn. Some of them have used that and really thrown me so much information and some, they've also gone 'oh not now' like you know. (1st-year student 2)
>
> The questions that I feel constrained asking are if it's like I have an inner voice guiding is the woman going to want to hear that do you know what I mean? So I followed the women through and I have some idea of what they're trying to achieve in their birth and if I feel like I'm being a little bit too focused on myself and my learning I'll hold the question back do you know what I mean? (1st-year student 2)

The second-year students also referred to the importance of follow-throughs for providing the bases to understand and negotiate with birthing women – the basis for ontogenetic ritualisation.

> The women form the boundaries. Like you don't walk in and ask a million questions, you know, you walk in and say something simple like how has your

[2] The term ontogenetic ritualisaton was coined by Tomasello from his observations of how great apes negotiated interactions, and specifically a baby securing milk from its mother. Further, Tomasello suggests that these findings cannot be extrapolated to humans. However, such is the consonance to what he describes and what is refrred to repeatedly in the anthropological literature, that is seems appropriate to use this term in this way, albeit unintended and possibly resisted by him.

day been and they'll put it all out and that's how you get the information. You don't poke all prod or anything but if they want to give it up to you they will I guess we are in the privileged position with what to do with the information then. (2nd-year student 3)

… then I think we set bounds as well like I've had a few of them go, you must come around to the house afterwards and I went actually we're not really meant to go. I think sometimes you do have to go, as lovely as a relationship is, I mean I think to me it's a professional thing and you know, yeah, I don't yeah. (2nd-year student 4)

These findings suggest that considerations of educational experiences cannot be restricted to their organisation and sequencing (i.e. curriculum practices) and how pedagogies practices can enrich that learning (i.e.). There is also a need to consider how learners come to engage with and learn from what is afforded for them.

Students' Practice-based Experiences: an Ordering

This paper has considered the salience, nature and contributions of two different kinds of practice-based experiences within tertiary education programs preparing students for specific occupational outcomes. The key points advanced in this paper are that particular kinds of practice-based experiences are likely to be generative of particular kinds of learning. Therefore, consideration of the kinds of experiences that students are to engage in, and how these experiences might be organised and ordered may well be central to effective tertiary education experiences that intentionally include practice-based experiences. In this instance, it has been proposed that before students engage in any kinds of practice-based experiences their level of readiness needs to be such that they can engage in them effectively. The degree and level of their competence with these is likely to be subject to local negotiation. However, in this particular instance, follow-through experiences provide important goal states for student midwives which are helpfully at the beginning of their programs, because they potentially furnish understandings, dispositions and procedures associated with the roles and requirements for effective occupational practice (i.e. midwifery). Yet, such experiences need to be augmented by those which place a student within the occupational practice and provide the opportunities to develop collegial relationships to learn further and hone important procedural capacities. More than techniques alone, it is competence with these capacities that will allow student midwifes to engage in midwifery practice, be accepted by peers and also provide quality care for birthing women. Here, it is suggested that there is a particular sequencing of activities that may secure these kinds of outcomes, when considered together. Beyond the particular ordering of experiences is the importance of students' engagement with these experiences and the ways in which they enact their personal epistemologies in learning effectively.

So, there are a set of wider implications arising from this specific instance. Firstly, regardless of the program and its occupational focus, there needs to be a consideration of the kinds of knowledge that are required by the graduating students and how kinds of capacities can be developed. By considering practicum experiences as being a part

of the totality of student experiences does much to focus attention on the particular kinds of learning that can be realised through those experiences as well as those taken in the university. Secondly, identifying experiences that can assist learners understand the goals and subgoals that they need to achieve is a helpful starting point regardless of whether or not the learning experiences are to be wholly based in education institutions or elsewhere. It prompts a consideration of how learner led experiences that constitute higher education requiring clear goals to which personal efforts and constructive acts can be directed. Thirdly, organising the sequencing and load of these experiences can be informed by what is best required to happen that is also mediated by what is possible in terms of students' workload and overlapping commitments. Fourthly, a consideration of what particular kinds of learning need to be secured before the students engage in practice settings, per see, may be helpful if students will be expected to perform particular tasks in those settings. Fifthly, in the example here, the follow through provided a vehicle for the integration of the experiences of the birthing women. Yet, other courses may not have such experiences. Hence, there may be a need to explicitly identify and provide experiences that can be used to integrate what has been learnt across both settings. So, hopefully the findings here go beyond the application to midwifery programs.

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