NTFS "Beyond Competence" project

Review of literature related to academic and workplace learning

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The starting point for the *Beyond Competence* project was a desire to "enhance the experience of healthcare students in the transition to clinical learning" (see project bid). In the past ten years, a vast amount of literature has been published in relation to healthcare students' early clinical placement experiences. This literature includes papers which have identified problems in current healthcare education, as well as ones which have presented solutions for improving healthcare training in the future. Many of these papers discuss problems in terms of a "theory-practice" gap and attribute difficulties to a lack of "preparedness" on the part of individual learners (for examples see Berridge et al., 2007; Chittenden et al., 2009). The purpose of this literature review is to examine and critique the existing literature related to healthcare students' "preparedness" for practice. Alternative ways of understanding healthcare education will then be presented, including recent work that suggests a more nuanced understanding is needed if we are to significantly improve healthcare training and practice.

Methods

Literature related to the topic of healthcare students' "preparedness" for practice was sourced from three electronic databases, MEDLINE, CINAHL, and Web of Science. These databases were searched using the terms ((student* or trainee*) and prepar*) in the title search field and (practice or placement or practicum) in the abstract search field. The search was limited to articles published between 2002 and 2012. Only research articles pertaining to the three professions studied in the NTFS project (medicine, nursing, and audiology) were retained for review. A full list of these fifty-six articles is contained within the reference list at the end of this paper (p. 10). A UK General Medical Council report (Illing et al., 2008) was added to the list of articles obtained from databases, due to its high degree of relevance to the research topic.

All fifty-seven publications were then reviewed and synthesised according to the research focus, methodology, findings, and assumptions underpinning the authors' approach to the topic of healthcare work and learning. The emerging findings are presented in the early sections of this paper, along with citations of representative examples. Alternative perspectives for understanding healthcare education are then introduced.

Studies about "preparedness"

Healthcare students' preparation for practice has remained a significant concern over the past decade. Of the publications reviewed, thirty-three nursing and midwifery studies included words like preparation, prepared, or preparing in the title, and sixteen similar studies appeared in medicine. No articles could be found about audiology students' preparation in particular, however six articles were found about preparation for healthcare practice in general.

Publications about healthcare students' preparation could be grouped into three main categories. Some authors have attempted to assess healthcare students' levels of preparation, by surveying clinicians or academics (see Matheson and Matheson, 2009), assessing students' competencies (see Naylor et al., 2010) or asking students' about their degree of confidence (see Siu et al., 2010). Other authors have described curriculum developments aimed at improving students' levels of preparation and reported positive outcomes (for examples, see Boudreau et al., 2009; Callen & Lee, 2009; Fry et al., 2008). The third category includes studies which have evaluated the effectiveness of interventions designed to better prepare students for practice, such as simulation of clinical practice (Bland & Ousey, 2012; Hope et al., 2011), transition courses (Berridge et al., 2007; Dare et al., 2009; Matheson et al., 2010; O'Brien & Poncelet, 2010), skills training sessions (Brunt et al., 2008), interprofessional training wards (Pelling et al., 2011), or a gaming workshop (McLafferty et al., 2010). These types of evaluation studies have often employed pre- and post-intervention surveys or assessments to measure increased preparation (for examples see Berridge et al., 2007; Brunt et al., 2008; McLafferty et al., 2010).

Across disciplines, there remains a widely held perception that students are under-prepared for healthcare practice (for recent examples, see Illing et al., 2008; Matheson & Matheson, 2009; Siu et al., 2010). Students have been described as ill-prepared for particular areas of practice, such as critical care (Ruth-Sahd et al., 2011), older adult care (Clendon, 2011), end-of-life care (Siu et al., 2010), mental health nursing (Curtis, 2007; Happell, 2008a, 2008b), work with people with disabilities (Chenoweth et al., 2004; Guillett, 2002), interprofessional work , and rural practice (Bender & Braziel, 2004; Vanleit & Cubra, 2004). Students have also been noted to require preparation in order to effectively respond to issues such as bereavement (Carson, 2010), domestic violence (Hayward & Weber, 2003), and patient restraint (Valler-Jones & Shinnick, 2005). In addition, a large proportion of studies have drawn attention to deficiencies in students' competencies in clinical practice settings. Deficits have been observed in areas such as clinical skills (Matheson & Matheson, 2009), communication (Matheson & Matheson, 2009), pharmaceutical knowledge (Manias & Bullock, 2002; Illing et al., 2008), and informatics knowledge (McNeil et al., 2004). These studies often raise serious concerns about the quality of current healthcare education.

In a report for the UK General Medical Council, Illing et al. (2008) identified factors which influenced the preparedness of graduates from three UK medical schools. These included both internal and external factors. Internal factors included the graduate's "personality and learning style" (p. ii) and the external factors included undergraduate clinical placements, shadowing, induction, and the support of others (both inside and outside the workplace). Illing et al. concluded that preparedness could be improved by having more "experiential learning" (p. iii) in the undergraduate curriculum and by giving students a greater role in medical teams. These findings are consistent with a large number of studies about preparedness of healthcare students (for recent examples, see Eyal & Cohen, 2006; Happell, 2008a; O'Brien & Poncelet, 2010). Suggestions for increased clinical exposure have included shadowing periods (Berridge et al., 2007), skills training (Brunt et al., 2008), and case-based or "problem-based" teaching (Curtis, 2007; Vanleit & Cubra, 2005). A need for healthcare students to be afforded greater responsibility has been further identified by Berridge et al. (2007), Dare et al. (2009), and Manias and Bullock (2002a). In addition, authors have called for greater inclusion of specific topics in lectures and tutorials, such as death and bereavement (Carson, 2010), older adult care (Clendon, 2011), and menopause management (Schnatz, 2008). The above recommendations have led to the development of interventions to improve healthcare students' preparedness for practice.

Preparedness interventions

A range of interventions for improving preparedness has been implemented and evaluated. These interventions include various types of simulation, transition courses, clinical skills training, interprofessional experiences, and programmes aimed at improving students' attitudes towards particular areas of practice. This section of the review summarises what is known about the effectiveness of interventions aimed at improving preparation for practice.

In the last few years, studies evaluating the effects of simulation on preparation for medicine and nursing work have begun to emerge (Bland & Ousey, 2012; Hope et al., 2011; McLafferty et al., 2010; Richards et al., 2010; Ruth-Sahd et al., 2011). Both "high-tech" (e.g. McLafferty et al., 2010) and "low-tech" (e.g. Ruth-Sahd, et al., 2011) simulation interventions have been evaluated. For example, Richards (2010) evaluated a simulation designed to prepare nursing students for their first home visits. Analysis of pre and post simulation surveys revealed an increase in students' self-reported confidence. Other simulation interventions have been found to be popular among healthcare students (Hope et al., 2011; McLafferty et al., 2010). Despite the popularity of simulation, learning outcomes have been observed to be highly variable (Bland & Ousey, 2012). There are also concerns that the introduction of simulation teaching and learning will replace hours of practice in clinical settings (Hope et al., 2011) and that students will continue to struggle to

"apply" concepts which are learned outside of a clinical setting (McLafferty et al., 2010).

Several recent studies have explored the benefits of implementing courses designed to ease the transition to clinical work (Berridge et al., 2007; Dare et al., 2009; Matheson et al., 2010; O'Brien & Poncelet, 2010). Transition course content has included aspects such as procedural and clinical skills training, induction, shadowing, and stress management (Berridge et al., 2007; O'Brien & Poncelet, 2010). Students have reported feeling more confident (Berridge et al., 2007), prepared (Matheson et al., 2010), competent and independent (Dare et al., 2009) following participation in transition courses. It is possible that transition courses are most effective when they include exposure to clinicians and clinical scenarios. Two studies found that students valued the shadowing aspects of transition courses the most (Berridge et al., 2007; Matheson et al., 2010) and a survey of North American medical schools recommended that transition courses provide students with greater exposure to clinical routines, norms, and professionals (O'Brien & Poncelet, 2010).

The outcomes of studies evaluating the effects of clinical skills training on medical students' levels of preparation are mixed (Barnard et al., 2011; Berridge et al., 2007; Brunt et al., 2008; Naylor et al., 2010). Brunt et al. (2008) evaluated the effects of surgical skills training on students' performance and perceived preparedness and measured significant time improvements pre- to post-training on four of five surgical tasks. Naylor et al. (2010) noted similar improvements after a course was implemented to prepare students for surgery internships. Students who participated in the course achieved proficiency on most clinical tasks and reported increased confidence. However, not all evaluations of clinical skills training have led to overwhelmingly positive results. Berridge et al. (2007) found that clinical skills revision was variably received by students and Barnard et al. (2011) found that pre-placement training did not lead to significant increases in the frequency with which students undertook Papanicolaou (Pap) smear tests. These two studies imply that a more complex approach is required to improve students' clinical competencies.

Several of the reviewed articles emphasized a need for students to be prepared for interprofessional practice (Koch et al., 2009; Morison et al., 2010; Pelling et al., 2011; Ruth-Sahd et al., 2011). Of these, Pelling et al. (2011) provided the most thorough evaluation of an interprofessional training intervention. Over a five-year period, Pelling et al. measured the effects of a two-week interprofessional training ward rotation on students' understandings about interprofessional work. Students who undertook the rotation reported increased insight about their own roles, the roles of other professionals, and the value of teamwork within health care. This study indicated that exposure to interprofessional work may increase students' understandings of professional roles.

A few studies have suggested that preparation can improve students' attitudes towards particular areas of practice (Chenoweth et al., 2004; Curtis, 2007; Gum, 2007). For example, Chenoweth et al. (2004) measured nursing students'

attitudes towards disablement and found that nursing students held surprisingly positive attitudes towards people with disabilities. Chenoweth et al. explained that the students' high appraisals were due to their participation in a "disability-specific preparation programme" prior to placement in a rehabilitation setting. Other studies have indicated that location-specific preparation may lead to increased numbers of nurses seeking employment in a particular area of practice. Curtis (2007) suggested that mental health-specific preparation had led to increased numbers of nurses choosing to work in mental health and Gum (2007) reported that students actively sought nursing employment in rural settings after a rurally-based bachelor of nursing program. Similarly, Edwards et al. (2004) found that students were more likely to select a rural placement when they felt "competent, confident and organised about their clinical experience" (p.341).

In summary, reported outcomes of interventions aimed at improving preparedness are variable. Some interventions have led to students feeling more confident, competent, and prepared (Berridge et al., 2007; Dare et al., 2009; Matheson et al., 2009) and a couple of studies (Brunt et al., 2008; Naylor et al., 2010) have noted increases in proficiency following clinical skills training. It is likely that interventions are most effective when they include exposure to real clinical settings and scenarios and this is increasingly being recognised by healthcare academics (Happell, 2008a; Illing, et al., 2008; Matheson et al., 2010; O'Brien & Poncelet, 2010). Furthermore, it is possible that interventions will be most effective when they account for the full complexities of healthcare education and practice. For this reason, no review on the topic of preparedness would be complete without consideration of the theoretical assumptions underlying this area of scholarship. The next section identifies the assumptions manifest in the literature on students' preparation for healthcare practice.

Understandings behind "preparedness"

Much of the literature on healthcare students' preparedness makes a distinction between two discrete sites of learning. According to this view, students learn "theory" in the university and then "practice" in clinical settings (see Eyal & Cohen, 2006; Hope et al., 2011; Matheson et al., 2010; Prince et al., 2005). Students' entry into clinical settings is understood as an abrupt transition, which is highly problematic and stressful (Berridge et al., 2007; Cooper et al., 2005; O'Brien & Poncelet, 2010; Prince et al., 2005). Efforts to improve students' preparedness for practice have therefore aimed to "smoothen" this transition (Berridge et al., 2007; Cooper et al., 2005; Matheson et al., 2010) and reduce the "theory to practice gap" (Berridge et al., 2007; Hope et al., 2011).

Essential to these understandings is the metaphor of learning as "transfer" (Hager & Hodkinson, 2009, for examples in healthcare education see Matheson et al., 2010, p. 8; Hope et al., 2011, p. 715). Knowledge is viewed as a product, which can be moved from place to place in a predetermined way. Accordingly, the desired outcome of preparedness interventions is for students to "acquire" the knowledge

and skills needed for practice (see Carson, 2010, p. 367; Matheson et al., 2010, p. 8). It is assumed that individual students will learn knowledge and skills in the university that they can later take into the workplace (Matheson et al., 2010). There is comparatively little appreciation of the ways that knowledge spreads and develops across healthcare teams and diverse clinical sites.

There is, however, an increased acknowledgement that some aspects of healthcare work can only be learned over time and through clinical experience (Carson, 2010; Matheson et al., 2010). Carson's (2010) focus group participants indicated that it may not be possible to prepare students to cope with a situation until they have actually experienced it themselves. When asked whether they should be taught about death in the classroom, some students reported that it was only through experiencing events and debriefing afterwards that they began to feel less apprehensive. An understanding that learning occurs through experience is also evident in the literature recommending increased shadowing periods (Berridge et al., 2007; Illing et al., 2008; Matheson et al., 2010). Despite references to knowledge "transfer" and "acquisition", Matheson et al. (2010) found that working with a foundation year doctor was valued by medical students as the most useful and effective component of a transitional preparation course. These studies suggest that students learn most through undertaking work with others and in the clinical settings in which they will later be employed.

The metaphor of learning as "transfer" implies that knowledge and skills are relatively stable over time and across locations. This understanding may limit recognition of the crucial role of organisation-specific cultures, practices, and relationships in healthcare professionals' work. Recent research has shown how doctors' performance is highly contingent on a range of unpredictable organisational, practical, and clinical factors, such as the amount of support doctors receive and site-specific practices (Kilminster et al., 2010; Kilminster et al., 2011). In other words, the way that healthcare professionals practice may be dependent on where they are working and who they are working with at a particular time. Across interviews and observations, Kilminster et al. (2011) found that doctors' reports of actual practice deviated from formal practice protocols and that practice was dependent on "the setting, the trust in question, time of day or night, the composition of the team and whether other members of the team were present" (p. 1011). Furthermore, doctors' practice was observed to be affected by others' perceptions of their abilities and by individual consultants' preferences. These are aspects that it would be impossible for students to learn prior to entering a clinical setting. Rather than thinking about learning as transfer, it may be more crucial to understand the ways in which students learn organisation-specific aspects and develop their relationships with others.

Leading workplace learning theorists have now rejected the metaphor of learning as "transfer", because "transfer" implies that knowledge can be applied in new settings in an uncomplicated way (Hager & Hodkinson, 2009). Instead, the

metaphor of learning as "becoming" is preferred. "Becoming" portrays learning as an ongoing process, which is both deliberative and contingent on the ever-changing situations in which learning occurs (Hager & Hodkinson, 2009; Hodkinson et al., 2008). This shift in workplace learning theory offers new and useful ways of understanding healthcare professional education, which takes place across a diverse range of locations, healthcare teams, clinical departments, and organisational structures. From this viewpoint, it is not possible to fully prepare professionals for the workplace, as workplace practices change and develop over time and across different clinical settings. Learning, practice, and performance are inseparable and expertise is distributed among team members rather than located in individuals (Hager, 2011; Hodkinson et al., 2008). These understandings may explain why efforts to prepare students have not fully resolved persistent problems in healthcare education and practice.

New approaches for understanding healthcare education and practice

Previous literature on preparedness focuses on the ways in which individuals learn prior to healthcare practice. There has been comparatively little focus on the ways in which healthcare students learn at and through work, and through interacting with other people, objects, and environments. It is likely that this is due to prevailing understandings about learning in healthcare education. Individualistic understandings of learning are widely accepted without question and underlying assumptions are rarely examined or critiqued. This area needs attention if we are to develop educational interventions that will improve healthcare training and practice.

Recent research has shown how healthcare work is both situated and relational (Kilminster et al., 2011). Practice requirements vary, depending on the particular place where a professional is working, and who they are working with. In order to grapple with these contextual features of healthcare work, interdisciplinary research approaches are vital. Theoretical and methodological perspectives from the social sciences offer new and exciting possibilities for studying and conceptualising healthcare professional education. Recent articles in leading medical education journals have called for greater engagement with the disciplines of anthropology and sociology in particular (Kuper & D'Eon, 2011; Mann, 2011). Engagement with these disciplines will enable exploration of aspects of healthcare education that have received insufficient attention to date.

The latest workplace learning theories offer new ways of understanding healthcare education. These theories treat learning as contextual, sociomaterial, and embedded in practice (Fenwick, 2010; Hager, 2011). In the wider field of education, researchers are increasingly drawing on sociomaterial approaches to understand the complexities of work and learning (Fenwick et al., 2011). Approaches such as complexity theory, actor-network theory (ANT), cultural historical activity theory (CHAT), and spatiality theories are demonstrating how knowledge emerges over time and between the various "things" in education, including students, teachers,

learning activities and spaces (Fenwick et al., 2011, p. 2). Such approaches may be especially useful for understanding the complexities of healthcare practice, which involves a wide range of actors, locations, and materials.

The majority of research on healthcare students' preparation has employed interview and/or survey methods (for recent examples, see Bland & Ousey, 2012; Hope et al., 2011; McLafferty, et al., 2010; Pelling et al., 2011). It is likely that these methods have provided only a partial insight into the problems that arise in healthcare education and the ways in which healthcare education can be improved. In medical education literature, authors place emphasis on the "hidden curriculum", the implicit knowledge that doctors require to practice effectively in specific settings, and the ways in which doctors learn informally at work (Lempp & Seale, 2004; Ozolins et al., 2008; White et al., 2009). Interviews and surveys may not fully capture these less discernable forms of learning and it is possible that trainees do not immediately recognise what they have learned (Eyal & Cohen, 2006; Hunter et al., 2008). Furthermore, it is evident that academics and students hold strong assumptions about learning and firmly adhere to the narrative of the "theory to practice gap" (Hope et al., 2011). It is therefore highly likely that these assumptions are reproduced when students answer interview or survey questions.

Ethnographic research methods may be helpful for gaining a more nuanced understanding of healthcare students' learning. Ethnographic methods have long been used in the social sciences, but much less frequently in healthcare education research (for classic examples in medicine see Becker et al., 1961; Merton et al., 1957; for a recent ethnography in nursing see Hunter et al., 2008). In ethnographies, researchers gain rich insights into people's practices and environments by observing and participating alongside the group of study (Reeves et al., 2008). Through close engagement, ethnographers come to identify perceptions and practices that are not immediately apparent (Atkinson & Pugsley, 2005; Reeves et al., 2008). Ethnographic methods may therefore provide us with opportunities to detect and make sense of the types of learning that are not perceived by healthcare students themselves. Further still, observation of students' learning will enable greater reflection on the ways in which students learn over time and through interaction with others, objects, and environments. This knowledge will complement and add to the insights already gained through the research reviewed in this paper.

Conclusions

Within healthcare literature, there is a prevailing assumption that individual students can be sufficiently prepared for healthcare practice, so that they are "oven-ready and self-basting" (Atkins, 1999). Studies continue to report that healthcare students' are ill-prepared for the demands of clinical practice and that the solution to improving healthcare practice is better preparation, more clinical skills teaching, and so on. Evaluations of interventions aimed at better preparing students have reported positive outcomes, such as self-perceived increases in confidence, competence, and

preparation. It is likely that the most effective interventions are the ones that include greater exposure to clinical settings and scenarios.

Previous studies about preparation have relied on understandings of learning as "transfer". Accordingly, it is assumed that individuals can "acquire" knowledge and skills at the university, which they can later "apply" in the workplace. These understandings fail to emphasise the situational and relational aspects of healthcare work and learning, which are crucial for professionals and students' day to day interactions with patients and families, other professionals, and the general public. Recent research brings the privileging of preparation into question, as any prior learning can only contribute a portion of what is required to undertake safe and effective healthcare work.

In order to make significant improvements to healthcare education and practice, new research approaches are needed. The latest workplace learning theories offer new ways of understanding students' learning and practice and encourage greater consideration of the social, material, and situated aspects of healthcare work. Research using trusted social science methods will help us to understand these features further. More insights may be gained through in-depth study of the workplace than through focussing solely on individuals' learning. Only once we know more about the contextual features of healthcare professionals' learning will it become possible to develop interventions that make a real difference to healthcare education and practice.

Limitations of the review

As the search was effectively limited to articles with preparation in the title, it is possible that other relevant publications were missed. Furthermore, any review which uses only a handful of databases will always be partial. However, a glance at the content of recent UK and international healthcare education conferences indicates that the publications included here are consistent with current work in this field.

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