Exploring the link between self-efficacy, workplace learning and clinical practice

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Pre-registration nurse education includes both conceptual and practical elements to prepare graduates for the transition to clinical practice. Workplace learning plays an important role in developing students' confidence, clinical skills and competency. This paper explores the, perhaps overlooked, centrality of self-efficacy to all areas of influence on students' and graduates' nursing practice, and proposes that clinical practice, in fact, lies at the intersection of self-efficacy and knowledge of core concepts. The potentially significant implications for both nursing education and clinical practice including the need for greater consideration of the pervasive influence of students' self-efficacy in future curriculum development, are discussed. *(Asia-Pacific Journal of Cooperative Education, 2016 17(3), 215-225)*

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BACKGROUND

Pre-registration nurse education includes both conceptual and practical elements to prepare graduates for the transition to clinical practice. Nursing practice "encompasses both the scientific knowledge acquired during pre-registration training and the 'rules of thumb' that are largely acquired during on-the-job training and experience" (Dreyfus & Dreyfus, 2009, p. 1). Australian nursing students are required to participate in at least 800 hours of workplace learning (clinical placements) over the course of their program in a variety of healthcare settings (Australian Nursing and Midwifery Accreditation Council [ANMAC], 2012). The Australian accreditation guidelines stipulate that these workplace experiences should "…provide timely opportunities for experiential learning of curriculum content that is progressively linked to attaining the current National Competency Standards for the Registered Nurse" (ANMAC, 2012, p. 18).

Workplace learning (WPL) provides "integrative learning activities to promote application of disciplinary knowledge learned at university to real-world work contexts" (Smith & Worsfold, 2015, p. 22). Improvement in students' self-efficacy and generic skills such as problem-solving, oral communication and critical thinking have been reported as outcomes of WPL (Freudenberg, Brimble and Cameron, 2011; Jackson, 2013; Subramanian & Freudenberg, 2007). For nursing students, the interactions undertaken with staff and patients in an authentic healthcare setting provide not only an understanding of the cultures and values of the nursing profession but of themselves in the professional world (Danielson & Berntsson, 2007). Thus, workplace learning is a key component in the process of professional socialization (Zarshenas et al., 2014).

In any healthcare profession, it is imperative that students are able to transfer their undergraduate knowledge and skills into practice to become competent practitioners. According to Woods et al. (2015) "…employers expect graduate nurses to be work ready, which includes meeting the competency standards and being able to function safely and independently, or in other words, ready to 'hit the ground running' in relation to providing clinical care" (p. 360). Despite the many hours of workplace learning undertaken during pre-registration training, new graduate nurses are often perceived (by employers) to be

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underprepared for the demands and challenges of the clinical environment (Greenwood, 2000) and the transition to practice can be both complex and stressful (Kaihlanen, Lakanmaa, & Salminen, 2013; Newton & McKenna, 2007). New graduates often report being overwhelmed by the workload required of them, feeling "constantly challenged by their wavering confidence" (Duchscher, 2008, p. 444) and find themselves "seeking acceptance into a tradition-bound and hierarchical nursing culture" (Duchscher, 2008, p. 445).

Demanding workloads and a pervasive need to 'fit in' can influence new graduates' clinical practice. One such example is in the area of Infection prevention and Control (IC). With healthcare-associated infections (HAIs) now being the most common adverse effect of healthcare, the re-emergence of infectious diseases such as Zika virus and an ever-increasing body of antibiotic-resistant microorganisms, the importance of properly applied IC practices in the healthcare environment cannot be overstated. Despite this impetus and the seriousness of the consequences, the infection control knowledge of health professional graduates, globally, has consistently been reported to be inadequate (Lugg & Ahmed, 2008; Sax et al., 2005; Shaban, 2006), potentially exposing themselves, their colleagues and their patients to life-threatening diseases.

The cause of sub-optimal IC knowledge/practice of nursing graduates is likely to be multi-factorial. We have previously argued that nursing graduates' IC knowledge, intentions and practice is influenced by: perceptions of science, health behavior beliefs, applied knowledge (microbiology) and clinical placement experiences (Cox, Simpson, Letts, & Cavanagh, 2015). Considered individually, however, none of these factors are sufficient alone to explain the systemic and ongoing sub-optimal infection control practices of healthcare workers (HCWs). As stated previously, there is little doubt that this is indeed a multi-factorial problem. However, upon closer inspection, there is one common but perhaps overlooked explanatory construct - self-efficacy - that underpins and/or influences each of the aforementioned factors.

SELF-EFFICACY – ROLE AND IMPLICATIONS FOR NURSING EDUCATION AND PRACTICE

Self-efficacy is defined as "people's judgment of their capabilities to organize and execute courses of action required to attain designated types of performances" (Bandura, 1986, p. 391). It is neither a static nor global trait but "a differentiated set of self-beliefs linked to distinct realms of functioning" (Bandura, 2006, p. 307). Thus, a person may feel highly efficacious in relation to one domain (e.g., parenting) but have low self-efficacy in relation to another domain (e.g., career progression).

Efficacy beliefs and expectations can be developed from four principal sources:

1. performance accomplishment of similar tasks (mastery experiences)
2. vicarious experience (observation of the success or failure experiences of other people)
3. verbal persuasion (positive feedback/suggestions from mentors and/or peers)
4. self-evaluation of physiological state.

In recent decades, self-efficacy has been recognized as an important factor in student motivation and learning and as a predictor of academic success (Bartimote-Aufflick, Bridgeman, Walker, Sharma & Smith, 2015; Gore, 2006). In the context of nursing education, nursing self-efficacy has been described as the "expectations of learning the knowledge base and performing the various skills necessary to become a registered nurse" (Harvey &

McMurray, 1994, p. 472). Students who have a strong nursing self-efficacy will perform academic tasks with a greater degree of confidence, undertake challenging tasks more readily and persist longer in the face of obstacles or difficulties (Zimmerman, 2000). More importantly, increased self-efficacy has been linked to improved professional practice behaviors (Manojlovich, 2005). Bandura (1982, p. 122) described the important influence of self-efficacy in the following way:

> Knowledge, transformational operations, and component skills are necessary but insufficient for accomplished performances. Indeed, people often do not behave optimally, even though they know full well what to do. This is because self-referent thought also mediates the relationship between knowledge and action.

Thus, this construct has potentially significant implications for both nursing education and clinical practice.

Foundation Knowledge (Microbiology)

Bioscience subjects, which commonly incorporate anatomy, physiology, microbiology, chemistry and pharmacology, are a central component of pre-registration nursing curricula. The application and relevance of this knowledge to clinical practice has been illustrated in a number of qualitative studies (Jordan & Reid, 1997; Prowse & Lyne, 2000). Infection prevention and control policies and practices, for example, are underpinned by an understanding of microbiology (Roark, 2005) and misconceptions about microbiological principles and/or inaccurate perceptions of risk can hamper HCWs' capacity to implement appropriate IC precautions (Gould, 1995; Prieto & Clark, 2005). Despite the widely acknowledged importance of bioscientific knowledge as a foundation for safe and effective nursing practice (Birks, Ralph, Cant, Hillman, & Chun Tie, 2015; Clancy, McVicar, & Bird, 2000), nursing students' anxiety about studying science and the long-held perceptions of science being difficult and irrelevant to nursing practice are well documented (Courtenay, 1991; McVicar, Andrew & Kemble, 2014). These perceptions may negatively impact student's ability to learn and later apply microbiological and indeed scientific principles in general (Minasian-Batmanian, Lingard, & Prosser, 2005).

Self-efficacy has been shown to predict the success of nursing students in bioscience subjects. Andrew (1998) found science self-efficacy could predict up to 24% of students' academic performance in a first-year nursing bioscience subject. Thus, enhancing students' science self-efficacy would seem a likely focus for improving student success in these subjects. McVicar et al. (2014, p. 508), however, warned: "…the common practice of curriculum 'cramming' in Year 1, with bioscience teaching across the breadth of subjects and an expectation that students will be able to embrace detailed applied bioscience, is not conducive to raising efficacy". These authors recommended, in conjunction with altering admissions criteria to pre-registration nursing programs, to include pre-entry qualifications in science, a focus on raising students' science self-efficacy early in Year 1 in science via adjunct programs/workshops to support and develop students' study skills, and reinforcement of the application of biosciences in subsequent years of the program as key to addressing the 'bioscience problem'. Face-to-face science preparation ('Get Ready for Science') workshops run by bioscience lecturers prior to students commencing their first science subject have been shown to be beneficial for reducing nursing students' science anxiety, increasing their confidence about studying science and improving their academic performance in the first bioscience subject (Cox & Crane, 2014).

In Australia, the bioscience subjects are often taught as general service courses by academics with non-clinical backgrounds (Birks et al., 2015) so nursing students' perceptions of irrelevance are perhaps not surprising but could be alleviated, to some extent, by writing clinical scenarios in partnership with nursing staff. At some higher education institutions these bioscience subjects are common to a number of health programs and may therefore be undertaken by a diverse cohort of students. Thus, it may not always be appropriate for lecturers to use nursing-specific scenarios alone in those subjects. Nursing lecturers can therefore benefit students by reinforcing the theoretical microbiology during students' IC training prior to clinical placements.

Clinical Placements

In nursing education, workplace learning experiences (clinical placements) play an important role in development of nursing students' clinical competence, professional identity, and their self-concept (Goldenberg, Iwasiw, & MacMaster, 1997). By providing students with opportunities to perform nursing skills in an authentic clinical environment, these clinical learning experiences can facilitate mastery experiences, thereby helping "increase [students'] self-efficacy in activities they will perform as practicing nurses" (Goldenberg et al., 1997, p. 303). Similar findings of a positive relationship between WPL and self-efficacy have been reported in other disciplines such as accounting and criminal justice (Bates, Thompson & Bates, 2013; Subramaniam & Freudenberg, 2007). There is evidence, however, to suggest that students' with lower levels of confidence about managing their workplace experiences may benefit less from work-place learning than those with higher levels of pre-existing self-efficacy (Thompson, Bates, & Bates, 2016).

Self-efficacy is not a static attribute (Fencl & Scheel, 2005) and can be negatively affected by challenging clinical placements and experiences of failure, particularly if those negative experiences occur early in the learning process (van der Bilj & Shortbridge-Baggett, 2002). Anxiety about the clinical environment can also reduce students' proficiency for performing newly acquired skills/tasks/procedures (Cheung & Au, 2011). For some, the challenging nature of interactions with clinical supervisors (O'Mara, McDonald, Gillespie, Brown, & Miles, 2014), experiences of verbal and non-verbal bullying (Hakojärvi, Salminen, & Suhonen, 2014) and feelings of alienation can impact negatively on their self-esteem, self-confidence, motivation to learn and intention to enter the nursing profession (Chesser-Smyth & Long, 2013; Levett-Jones & Lathlean, 2009). Efficacy beliefs and expectations can influence both a person's perception of and behavior in challenging social environments. According to Bandura (2012, p. 14), "those of low self-efficacy are easily convinced of the futility of effort when they come up against institutional impediments, whereas those of high self-efficacy figure out ways to surmount them." In the clinical environment, nursing students who feel alienated or ostracized in the workplace are far more reticent to ask questions and are more likely to conform to poor practice than students who feel comfortable and secure in the workplace (Levett-Jones & Lathlean, 2009).

Ethical Decision-Making

Alongside clinical competency, moral competency forms an essential element of nursing practice (Baker, 1987). In fact, some authors have argued that the two are inseparable (Gallagher, 2006). There is little doubt that role modeling, both within the classroom and the clinical environment plays an important role in development of nursing students' ethical competence and more importantly, in promoting ethical action (Pang & Wong, 1998).

Indeed, previous research has identified the hand hygiene practices of clinical mentors to be the strongest predictor of nursing student hand hygiene compliance (Snow, White Jr, Alder, & Stanford, 2006). Two international studies exploring nursing students' experiences of infection prevention and control during clinical placements (Gould & Drey, 2013; Ward, 2010) reported students frequently witnessing poor role modeling of IC practices, particularly hand hygiene, aseptic technique and application of personal protective equipment (PPE) by clinical mentors and other HCWs. The most frequently reported example of poor practice in Gould and Drey's (2013) UK study was failure of practicing nurses to clean their hands between patients. Three quarters of the students in that study (292/388) also reported witnessing HCWs failing to apply appropriate isolation precautions such as PPE, with a similar proportion reportedly witnessing HCWs reusing items without cleaning between patients. Driven by a pervasive need to "fit in with the culture of the clinical site" (Knowles, 2014, p. 14), many students choose not to report non-compliant or improper behavior, despite being faced with ethically challenging situations. They fear repercussions (such as receiving a negative report from their clinical supervisor) and may even change their own IC practices to 'fit in'. Conversely, for some students, witnessing poor IC practice can make them more aware of their own practices and instill a determination to ensure that their own practices are exemplary (Ward, 2010).

It has been suggested that the failure of graduates to practice ethically despite their pre-registration training may be the result of 'moral blindness', the denial of an ethical problem or failure to view a practice situation from an ethical perspective (Gallagher, 2006). Alternatively, poor clinical practice may be a manifestation of ethical drift, "the gradual ebbing of standards that can occur in an individual, a group, or an organization as a result of environmental pressures. It often occurs insidiously, and even without conscious awareness" (Sternberg, 2012, p. 58). Thus, HCWs who have experienced ethical drift may not even be aware that their behavior is unethical.

Gallagher (2006) asserted the importance of moral perception in ethical competence and the need to develop nursing students' perceptual abilities through the enhanced incorporation of medical literature and patient narratives into the ethics curriculum. Ultimately, nursing curricula must not only promote ethical 'knowing' but ethical 'doing'. Gallagher (2006, p. 234) warned that "[p]rofessional actions do not necessarily improve with ethics education. Yet without an aspiration to ethical action, ethics education is futile." Thus, observation of role models emulating moral behavior during clinical placements, developing students' capacities to act on their values (Lynch, Hart, & Costa, 2014) and providing opportunities to self-reflect and deliberate and reflect on both positive and negative role models back in the classroom (Pang & Wong, 1998) are likely to positively influence self-efficacy for ethical decision-making.

Leadership

Leadership skill development is an integral component of pre-registration training in most health professions. It is important for students to acquire and demonstrate professional leadership skills as part of their pre-registration training. Middleton (2013, p. 84) claimed that "[n]ursing care…must be delivered by professionals with both clinical skill and personal leadership qualities to ensure care is person-centred and facilitates the optimum patient experience." However nursing students' often feel immense pressure to conform to the mores of the workplace and in the case of IC, this commonly manifests as failure to contest poor clinical practice, despite knowing it to be incorrect (Ward, 2010). Positive deviance, that

is, "intentional and honorable behavior that departs or differs from an established norm" (Gary, 2013, p. 28) may be one process for creating change in a clinical environment where poor practice is commonplace. Positive deviance however, involves risk for the person deviating (Gary, 2013) and is therefore likely to only be displayed by those students and graduates who feel empowered and possess strong self-leadership skills. Manz (1992) defined self-leadership as "the influence people exert over themselves to achieve the self-motivation and self-direction needed to behave in desirable ways" (p. 80) and he argued that self-leadership lies at the heart of empowerment. Spreitzer, De Janasz, and Quinn (1999) noted that "[e]mpowered individuals do not wait passively for the work environment to provide direction; instead, they take a proactive approach toward shaping and influencing their work environment." Self-leadership is an important attribute in multi-disciplinary teams where distributed leadership is an expectation to enable each member of the team to contribute their knowledge and skills to the patient care. Statistical modeling undertaken by Prussia, Anderson, and Manz (1998) found that the utilization of self-leadership strategies positively influences perceived self-efficacy, which subsequently has a positive effect on performance. Although the participants in the Prussia et al. (1998) study were junior management students, it is feasible that similar trends would be present in nursing student cohorts given the underlying centrality of self-efficacy to both situations.

Health Behavior Theories

The construct of self-efficacy is integral to a number of different behavioral models, including the Health Belief Model (HBM), which have been widely used to explain and predict and influence health behaviors, including the IC practices of health professionals (Brinsley, Sinkowitz-Cochran, Cardo, & The CDC Campaign to Prevent Antimicrobial Resistance Team, 2005). According to the HBM, behavioral change is influenced by a combination of factors:

- Socio-demographic factors
- Perceived susceptibility, severity, benefits and barriers
- Cues to action (strategies to encourage/activate behaviour).

In summary, self-efficacy is an integral component of many health behavior theories, including the HBM. Regardless of the perceived incentives of changing a health-related behavior (or perceived severity of the threat of not doing so), behavioral change is only likely to occur if the individual believes "that they are personally capable of adopting new behaviours" (Rosenstock, Strecher, & Becker, 1988, p. 176). A busy workplace can make it difficult for students to develop the skills learnt as part of their pre-registration education. Workload demands and time constraints in the workplace can reduce students' sense of self-efficacy and perceived level of control, which may, in turn, negatively impact on their IC intentions (Ward, 2013). Role modeling of good IC practices from clinical preceptors is likely to enhance students' IC self-efficacy and facilitate increased effort and persistence toward good IC practice. Major improvements in IC practice may, however, be difficult to achieve whilst nursing students feel they have little control over their own IC practices and/or are powerless to challenge poor practices as a result of their student status and the need to obtain a 'good report' from their supervisor.

Where To From Here? Enhancing Students' Self-Efficacy for IC Practice:

Given the centrality of self-efficacy to the aforementioned areas of influence on students' and graduates' nursing practice, there is an important need to recognize the importance of both

self-efficacy and foundational knowledge, that is, knowledge of theoretical microbiology concepts to IC practice. It could be argued that clinical practice, in fact, lies at the intersection of self-efficacy and knowledge of core concepts (Figure 1).

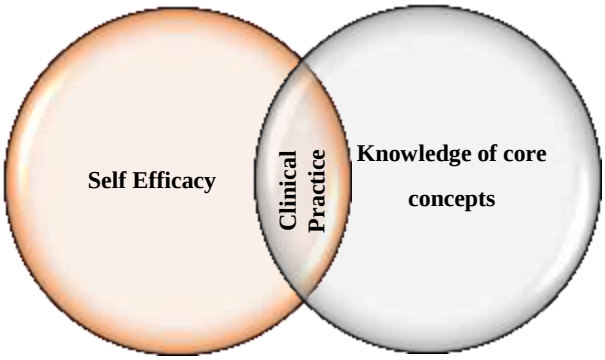

FIGURE 1: Intersection of self-efficacy and core concept knowledge

Bandura (1977) proposed that poor performance in a given area may not be due to a lack of skills and/or knowledge but due to a lack of self-efficacy to use the knowledge and skills effectively. Identification of areas where students' self-efficacy levels are low could be used as the basis of interventions and development of tools to enhance IC self-efficacy, thereby improving students' learning in the classroom and transition to the workplace. This process would, however, require accurate measurement of IC self-efficacy. Bandura (2006, p. 308) warned that "scales of self-efficacy must be tailored to the particular domain of functioning that is the object of interest." Thus, development and validation of a self-efficacy scale specifically for IC would be an important first step.

Enhancing the nexus between universities, workplace learning supervisors and healthcare leaders must also become a strategic focus of nursing education. Some innovative education-service partnerships have reportedly been successful, particularly in the area of patient safety, for example, the implementation of dedicated education units within hospitals for students to have mastery experiences in a safe, supportive environment (Mulready-Shick, Kafel, Banister, & Mylott, 2009). Provision of welcoming, supportive clinical environments where nursing students feel valued as learners, team members and people will foster a sense of control and self-efficacy by enhancing students' sense of belonging.

Students work self-efficacy may also be enhanced by being made aware, before going on clinical placements, that they may witness behavior in the clinical environment that contradicts the good clinical practice they have been taught in the classroom. This may create ethical dilemmas for them (Knowles, 2014). Moreover, it is important for students to be reminded "the line between short cuts and unethical practice is subtle and easy to cross" (Cameron, Schaffer, & Park, 2001, p. 441) and the consequences of acquiescence, for both themselves and their patients, could be life-threatening. Post–clinical-placement debriefing sessions with a particular emphasis on providing students with an opportunity to process any ethical or practice dilemmas they experienced in the clinical setting may also be of benefit.

CONCLUSION

Self-efficacy is a construct which arguably underpins all aspects of health professional education and practice. There is a need for greater consideration, in future curriculum development, of the pervasive influence of self-efficacy on all areas that influence students' learning and subsequent clinical practice. Enhancing nursing students' self-efficacy and understanding of microbiology may be pivotal in ensuring that all commencing nurse graduates are confident and skilled in their ability to correctly and consistently apply appropriate IC precautions in a variety of contexts. Further research is needed to develop and validate self-efficacy scales to accurately measure nursing student's self-efficacy in relation to specific areas of the curriculum and workplace learning such as microbiology and IC. Identification of areas where self-efficacy levels are low could be used as the basis of interventions and targeted strategies to enhance self-efficacy, improve learning and teaching of microbiology and ultimately have a positive impact on IC practice.

REFERENCES

Andrew, S. (1998). Self-efficacy as a predictor of academic performance in science. *Journal of Advanced Nursing, 27*(3), 596-603. doi: 10.1046/j.1365-2648.1998.00550.x

Australian Nursing and Midwifery Accreditation Council. (2012). *Registered nurse accreditation standards 2012*. Retrieved from http://www.anmac.org.au/sites/default/files/documents/ANMAC_RN_Accreditation_Standards_2012.pdf

Baker, P. (1987). Moral competency: An essential element in the socialization of professional nurses. *Family and Community Health, 10*(1), 8-14.

Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioral change. *Advances in Behaviour Research and Therapy, 1*(4), 139-161. doi: http://dx.doi.org/10.1016/0146-6402(78)90002-4

Bandura, A. (1982). Self-efficacy mechanism in human agency. *American Psychologist, 37*(2), 122-147.

Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory*. Englewood Cliffs, NJ: Prentice-Hall.

Bandura, A. (2006). Guide for constructing self-efficacy scales. In F. Pajares & T. Urdan (Eds.), *Self-efficacy beliefs of adolescents*.Greenwich, CT: Information Age.

Bandura, A. (2012). On the functional properties of perceived self-efficacy revisited. *Journal of Management*, *38*(1), 9-44. doi: 10.1177/0149206311410606.

Bartimote-Aufflick, K., Bridgeman, A., Walker, R., Sharma, M., & Smith, L. (2015). The study, evaluation, and improvement of university student self-efficacy. *Studies in Higher Education*, *40,* 1-25. http://dx.doi.org/10.1080/03075079.2014.999319.

Bates, M., Thompson, C. M., & Bates, L. (2013). Not all dimensions of work self-efficacy are equal: Understanding the role of tertiary work placements in the development of the elements of work self-efficacy. *Journal of Cooperative Education and Internships, 47*(1), 19-30.

Birks, M., Ralph, N., Cant, R., Hillman, E., & Ylona Chun, T. (2015). Teaching science content in nursing programs in Australia: a cross-sectional survey of academics. *BMC Nursing, 14*(1), 1-9. doi: 10.1186/s12912-015-0074-x

Brinsley, K. J., Sinkowitz-Cochran, R. L., Cardo, D. M., & The CDC Campaign to Prevent Antimicrobial Resistance Team. (2005). Assessing motivation for physicians to prevent antimicrobial resistance in hospitalized children using the health belief model as a framework. *American Journal of Infection Control, 33*(3), 175-181. doi: http://dx.doi.org/10.1016/j.ajic.2004.12.004

Cameron, M. E., Schaffer, M., & Park, H. (2001). Nursing students' experience of ethical problems and use of ethical decision-making models. *Nursing Ethics, 8*(5), 432-445. doi: 10.1177/096973300100800507 10.1191/096973301680195364

Chesser-Smyth, P. A., & Long, T. (2013). Understanding the influences on self-confidence among first-year undergraduate nursing students in Ireland. *Journal of Advanced Nursing, 69*(1), 145-157. doi: 10.1111/j.1365-2648.2012.06001.x

Cheung, R. Y. M., & Au, T. (2011). Nursing students' anxiety and clinical performance. *Journal of Nursing Education, 50*(5), 286-289. doi: http://dx.doi.org/10.3928/01484834-20110131-08

Clancy, J., McVicar, A., & Bird, D. (2000). Getting it right? An exploration of issues relating to the biological sciences in nurse education and nursing practice. *Journal of Advanced Nursing, 32*(6), 1522-1532.

Courtenay, M. (1991). A study of the teaching and learning of the biological sciences in nurse education. *Journal of Advanced Nursing*, *16*(9), 1110-1116. doi: 10.1111/j.1365-2648.1991.tb03372.x

Cox, J. L., & Crane, J. W. (2014). Shifting the focus: Increasing engagement and improving performance of nursing students in bioscience subjects using face-to-face workshops to reduce anxiety. *International Journal of Innovation in Science and Mathematics Education, 22*(7), 11-22.

Cox, J. L., Simpson, M. D., Letts, W., & Cavanagh, H. M. A. (2015). Re-thinking microbiology/infection control education to enhance the practice-readiness of health professional students: More than just a curriculum issue. *Journal of Learning Design, 8*(1), 55-67.

Danielson, E., & Berntsson, L. (2007). Registered nurses' perceptions of educational preparation for professional work and development in their profession. *Nurse Education Today, 27*(8), 900-908. doi: http://dx.doi.org/10.1016/j.nedt.2006.12.007

Dreyfus, H. L., & Dreyfus, S. E. (2009). The relationship of theory and practice in the acquisition of skill. In P. Benner, C. Tanner & C. Chesla (Eds.), *Expertise in nursing practice: caring, clinical judgment and ethics (2nd ed.).* New York, NY: Springer

Duchscher, J. E. B. (2008). A process of becoming: The stages of new nursing graduate professional role transition. *Journal of Continuing Education in Nursing, 39*(10), 441-450.

Fencl, H., & Scheel, K. (2005). Engaging students. *Journal of College Science Teaching, 35*(1), 20-24. Retrieved from http://search.proquest.com/docview/200334720?accountid=10344

Freudenberg, B., Brimble, M., & Cameron, C. (2011). WIL and generic skill development: The development of business students' generic skills through work-integrated learning. *Asia-Pacific Journal of Cooperative Education*, *12*(2), 79.

Gallagher, A. (2006). The teaching of nursing ethics: Content and method. Promoting ethical competence. In A. H. Davis, V. Tschudin & L. de Raeve (Eds.), *Essentials of Teaching and Learning in Nursing Ethics*. Edinburgh, UK: Churchill Livingstone Elsevier.

Gary, J. (2013). Exploring the concept and use of positive deviance in nursing. *American Journal of Nursing, 113*(8), 23-34.

Goldenberg, D., Iwasiw, C., & MacMaster, E. (1997). Self-efficacy of senior baccalaureate nursing students and preceptors. *Nurse Education Today, 17*(4), 303-310. doi: http://dx.doi.org/10.1016/S0260-6917(97)80061-5

Gore, P. (2006). Academic self-efficacy as a predictor of college outcomes: Two incremental validity studies. *Journal of Career Assessment*, *14*(1), 92-115.

Gould, D. (1995). Infection control: A survey to determine knowledge of nurses in a clinical setting. *Nursing Standard, 9*(36), 35-38.

Gould, D., & Drey, N. (2013). Student nurses' experiences of infection prevention and control during clinical placements. *American Journal of Infection Control, 41*(9), 760-763. doi: http://dx.doi.org/10.1016/j.ajic.2013.01.025

Greenwood, J. (2000). Critique of the graduate nurse: An international perspective. *Nurse Education Today, 20*(1), 17-23. doi: http://dx.doi.org/10.1054/nedt.2000.0424

Hakojärvi, H.-R., Salminen, L., & Suhonen, R. (2014). Health care students' personal experiences and coping with bullying in clinical training. *Nurse Education Today, 34*(1), 138-144. doi: http://dx.doi.org/10.1016/j.nedt.2012.08.018

Harvey, V., & McMurray, N. (1994). Self-efficacy: A means of identifying problems in nursing education and career progress. *International Journal of Nursing Studies, 31*(5), 471-485. doi: http://dx.doi.org/10.1016/0020-7489(94)90017-5

Jackson, D. (2013). The contribution of work-integrated learning to undergraduate employability skill outcomes. *Asia-Pacific Journal of Cooperative Education*, *14*(2), 99-115.

Jordan, S., & Reid, K. (1997). The biological sciences in nursing: An empirical paper reporting on the applications of physiology to nursing care. *Journal of Advanced Nursing, 26*(1), 169-179. doi: 10.1046/j.1365-2648.1997.1997026169.x

Kaihlanen, A.-M., Lakanmaa, R.-L., & Salminen, L. (2013). The transition from nursing student to registered nurse: The mentor's possibilities to act as a supporter. *Nurse Education in Practice, 13*(5), 418-422. doi: http://dx.doi.org/10.1016/j.nepr.2013.01.001

Knowles, A. (2014). *Constructing baccalaureate nursing students' ethical experiences of classroom lessons and clinical practice.* (Doctoral dissertation, New York University). Retrieved from http://search.proquest.com/docview/1553234542

Levett-Jones, T., & Lathlean, J. (2009). `Don't rock the boat': Nursing students' experiences of conformity and compliance. *Nurse Education Today, 29*(3), 342-349.

Lugg, G. R., & Ahmed, H. A. (2008). Nurses' perceptions of meticillin-resistant staphylococcus aureus: Impacts on practice. *British Journal of Infection Control, 9*(1), 8-14. doi: 10.1177/1469044607084969

Lynch, S., Hart, B., & Costa, C. M. (2014). Giving voice to values: An undergraduate nursing curriculum project. *Collegian, 21*(4), 367-373. doi: http://dx.doi.org/10.1016/j.colegn.2013.09.004

Manojlovich, M. (2005). Promoting nurses' self-efficacy: A leadership strategy to improve practice. *Journal of Nursing Administration, 35*(5), 271-278.

Manz, C. C. (1992). Self-leadership … the heart of empowerment. *The Journal for Quality and Participation, 15*(4), 80.

McVicar, A., Andrew, S., & Kemble, R. (2014). Biosciences within the pre-registration (pre-requisite) curriculum: An integrative literature review of curriculum interventions 1990–2012. *Nurse Education Today, 34*(4), 560-568. doi: http://dx.doi.org/10.1016/j.nedt.2013.08.012

Middleton, R. (2013). Active learning and leadership in an undergraduate curriculum: How effective is it for student learning and transition to practice? *Nurse Education in Practice, 13*(2), 83-88. doi: http://dx.doi.org/10.1016/j.nepr.2012.07.012

Minasian-Batmanian, L. C., Lingard, J., & Prosser, M. (2005). Differences in students' perceptions of learning compulsory foundation biochemistry in the health sciences professions. *Advances in Health Science Education, 10*(4), 279-290. doi: 10.1007/s10459-005-1404-7

Mulready-Shick, J., Kafel, K. W., Banister, G., & Mylott, L. (2009). Enhancing quality and safety competency development at the unit level: An initial evaluation of student learning and clinical teaching on dedicated education units. *Journal of Nursing Education, 48*(12), 716-719. doi: 10.3928/01484834-20091113-11

Newton, J. M., & McKenna, L. (2007). The transitional journey through the graduate year: A focus group study. *International Journal of Nursing Studies, 44*(7), 1231-1237. doi: 10.1016/j.ijnurstu.2006.05.017

O'Mara, L., McDonald, J., Gillespie, M., Brown, H., & Miles, L. (2014). Challenging clinical learning environments: Experiences of undergraduate nursing students. *Nurse Education in Practice, 14*(2), 208-213. doi: http://dx.doi.org/10.1016/j.nepr.2013.08.012

Pang, M. S., & Wong, K. T. (1998). Cultivating a moral sense of nursing through model emulation. *Nursing Ethics, 5*(5), 424-440. doi: 10.1177/096973309800500610.1191/096973398676240993

Prieto, J., & Clark, J. M. (2005). Contact precautions for clostridium difficile and methicillin-resistant staphylococcus aureus (MRSA). *Journal of Research in Nursing, 10*(5), 511-526. doi: 10.1177/136140960501000508

Prowse, M. A., & Lyne, P. A. (2000). Revealing the contribution of bioscience*-based nursing knowledge to clinically effective patient care. *Clinical Effectiveness in Nursing, 4*(2), 67-74. doi: http://dx.doi.org/10.1054/cein.2000.0105

Prussia, G. E., Anderson, J. S., & Manz, C. C. (1998). Self-leadership and performance outcomes: The mediating influence of self-efficacy. *Journal of Organizational Behavior, 19*(5), 523.

Roark, J. (2005). *Microbiology 101 for the ICP. Infection control today.* Retrieved from http://www.infectioncontroltoday.com/articles/521feat1.html

Rosenstock, I. M., Strecher, V. J., & Becker, M. H. (1988). social learning theory and the health belief model. *Health Education & Behavior, 15*(2), 175-183. doi: 10.1177/109019818801500203

Sax, H., Perneger, T., Hugonnet, S., Herrault, P., Chrati, M., & Pittet, D. (2005). Knowledge of standard and isolation precautions in a large teaching hospital. *Infection Control & Hospital Epidemiology, 26*(3), 298-304.

Shaban, R. Z. (2006). Paramedic knowledge of infection control principles and standards in an Australian emergency medical system. *Healthcare Infection, 11*(1), 13-19. doi: http://dx.doi.org/10.1071/HI06013

Smith, C., & Worsfold, K. (2015). Unpacking the learning–work nexus: 'Priming' as lever for high-quality learning outcomes in work-integrated learning curricula. *Studies in Higher Education*, *40*(1), 22-42. doi: 10.1080/03075079.2013.806456

Snow, M., White Jr, G. L., Alder, S. C., & Stanford, J. B. (2006). Mentor's hand hygiene practices influence student's hand hygiene rates. *American Journal of Infection Control, 34*(1), 18-24. doi: 10.1016/j.ajic.2005.05.009

Spreitzer, G. M., De Janasz, S. C., & Quinn, R. E. (1999). Empowered to lead: The role of psychological empowerment in leadership. *Journal of Organizational Behavior, 20*(4), 512.

Sternberg, R. J. (2012). Ethical drift. *Liberal Education, 98*(3), 58-60.

Subramaniam, N., & Freudenberg, B. (2007). Preparing accounting students for success in the professional environment: Enhancing self-efficacy through a work integrated learning program. *Asia-Pacific Journal of Cooperative Education*, 8(1), 77-92

Thompson, C. M., Bates, L., & Bates, M. (2016). Are students who do not participate in work-integrated learning (WIL) disadvantaged? Differences in work self efficacy between WIL and non-WIL students. *Asia-Pacific Journal of Cooperative Education, 17*(1), 9-20.

van der Bilj, J., & Shortbridge-Baggett, L. (2002). The theory and measurement of the self-efficacy construct. In E. Lenz & L. Shortbridge-Baggett (Eds.), *Self-Efficacy in Nursing* (pp. 10-25). New York, NY: Springer.

Ward, D. J. (2010). Infection control in clinical placements: Experiences of nursing and midwifery students. *Journal of Advanced Nursing, 66*(7), 1533-1542. doi: 10.1111/j.1365-2648.2010.05332.x

Ward, D. J. (2013). The application of the theory of planned behaviour to infection control research with nursing and midwifery students. *Journal of Clinical Nursing, 22*(1-2), 296-298. doi: 10.1111/j.1365-2702.2012.04327.x

Woods, C., West, C., Mills, J., Park, T., Southern, J., & Usher, K. (2015). Undergraduate student nurses' self-reported preparedness for practice. *Collegian, 22*(4), 359-368. doi: http://dx.doi.org/10.1016/j.colegn.2014.05.003

Zarshenas, L., Sharif, F., Molazem, Z., Khayyer, M., Zare, N., & Ebadi, A. (2014). Professional socialization in nursing: A qualitative content analysis. *Iranian Journal of Nursing and Midwifery Research, 19*(4), 432-438.

Zimmerman, B. J. (2000). Self-efficacy: An essential motive to learn. *Contemporary Educational Psychology, 25*(1), 82-91. doi: http://dx.doi.org/10.1006/ceps.1999.1016

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