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Is the “Flipped” Pedagogical Model the Answer to the Challenges of Rural Nursing Education? : a Discussion Paper?

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Abstract

Rural Australian health services face significant challenges such as aging populations, access and retention of services and health practitioners as well as difficulties with staff training due to geographic isolation. Educational pedagogy, through a ‘flipped’ or ‘flipped’ classroom method has become popular in nursing literature whereby discussion surrounding its effectiveness, ability to increase performance, address learning outcomes and resolve the education-clinical practice divide is currently being explored. Several reviews that look specifically at the validity and implementation of the flipped classroom pedagogy into nursing education demonstrate a need for further scientific research. Current literature examines the in-class on campus implementation of the methodology but rarely does it consider the advantages or ways of implementing such a method in a rural off campus nursing learning environment. The use of technology is not the solution unless supported by interaction to develop practical situational skills. The authors consider advantages and disadvantages and identify central problems for the effective implementation of ‘flipped’ in off-campus rural nursing education.

Introduction

Rural health faces significant social, cultural and socio-political challenges such as aging populations, access and retention of services (Morell & Pollice, 2014) and health professionals (Dunkin, Juhl, & Stratton, 1996) as well as knowledge and training for the diverse situations faced by rural health nurses and other health practitioners (Bourke et al., 2004). It is acknowledged that the defining characteristic of rural health is geographic isolation, often possessing access difficulties (Gum, 2007). Isolation is an issue of distance as well as the size of community, which means nurses must provide a varied range of services and connections requiring a diversity of ability rather than specialization as seen in the urban communities (Gill, 1994).

Education and training have focused on urban centres, through on-campus teaching in tertiary institutions predominantly through lecture, tutorial and practical training in face-to-face models.
Offerings of off-campus rural nursing courses utilize on-line teaching methods, as nursing students in rural areas are more likely to be mature aged (non-school or college age leavers), caring for their own dependents, employed and travel longer distances to attend classes when offered in urban centres (ACER, 2011; Francis & Mills, 2011).

Reviews of nursing education in both Australia and the United States of America (USA) have recommended educational institutions adopt innovative teaching strategies to bridge the education-practice divide that has arisen partly from traditional university teaching methods focused on content and knowledge (Tan, Yue, & Fu, 2017). One innovative teaching strategy that has gained popularity is the “Flipped Classroom”, conceptualized by Berman and Sams (2006) and currently utilised in health and other disciplines (Belfi & Min, 2015; Bristol, 2014; Chen, Wang, Kinshuk, & Chen, 2014; Gilboy, Heinerichs, & Pazzaglia, 2015; House, Weldon, & Wysocki, 2007; Kong, 2014; Mattis, 2015; McLaughlin et al., 2014; Moffett & Mill, 2014; Rasmussen, Ferreira, Corbett, Stephenson, & Naves, 2015; Roach, 2014; Simpson & Richards, 2015; Tune, Sturek, & Basile, 2013). These examinations of the ‘flipped’ pedagogy implementations, their results in improved cognitive abilities and its positive engagement and outcomes for students has been clearly shown within current research. These studies focus on implementation within on-campus teaching, and do not consider whether flipped teaching could be implemented in off-campus rural situations faced in nursing.

This article examines the Flipped pedagogy and identifies the major problems to implementation that hamper the effectiveness of this method before providing recommendations to enable effective embedment into rural nursing education.

**Off-campus uses of technology**

The technological revolution was originally seen as a solution for remoteness for rural education. The provision of online material enables students to access resources in a timely manner and to engage with class materials at times suitable to their commitments. The “self-paced” or flexible aspects of online learning environments were seen as great advances in nursing and health education generally (Sheppard & Mackintosh, 1998; Wu, Chan, Tan, & Wang, 2018). Consequently universities and
educational institutions were quick to implement Internet courses and programs within what are referred to as distance education models or off campus delivery (Sowan & Jenkins, 2013; Ward & Sales, 2009). The Internet and recent innovations in technology have supported development of materials and tools online such as SARRAH (Services for Australian Rural and Remote Allied Heath (sarrah.org.au), and provide resources and connections on-line for rural health professionals. Universities in the development of their on-line courses adopted a repository of knowledge that could be accessed by students for their self-passed learning, which included journal articles, websites and databases, lecture notes, lecture recordings etc. Further advances in technology have enabled discussion groups, real-time transmissions of lectures with real time and responses by students, and virtual methods of interaction.

Even with these advances the National Review of Nursing Education, 2002 (Hazelton, 2002), (which identified a need to develop and continue to evolve flexible and responsive education and training using innovative educational processes, to bridge an education-practice divide) found that student’s knowledge and ability to implement this knowledge in the workplace was lacking (Tan et al., 2017). Universities appeared to believe that on-line teaching would reduce costs of teaching and increase returns for the university (Warelow, Wells, & Irwin, 2011) but Marginson’s survey of the success of global online courses in Asia-Pacific higher education, on the basis of income received by educational institutions, found that the repository model for provision of online had been unsuccessful as replacing the teacher with technology (Marginson, 2004). A review of on line-learning programs for nurses by Wu et al (2018) concluded that on-line learning offered flexibility and accessibility to students and they believed it provided a mechanism for educators to face challenges of work load, time and system support, but their research does not examine the costs of these courses the provision of technological support or the competing demands on staff for research provided by universities.

Technology itself is not the educational solution, but the use of technology has a supportive role that in a blended approach of learning can perform a function that enables flexibility and self-paced learning (Belfi & Min, 2015; Moraros, Islam, Yu, Banow, & Schindelka, 2015). The authors of this article argue the Flipped method of teaching resolves the criticisms identified in the online learning
literature that most on line learning is conducted through the provision of electronic repositories of knowledge without interaction with an educator or instructor are not as effective as the ‘Flipped’ method. In health education an example of the advance on repository online learning is “The Virtual Clinical Practicum” (Grady, 2011).

What is “Flipped”?

Flipped, short for “Flipping the Classroom” (Lage, Platt, & Treglia, 2000) or “inverted classroom” (Talbert, 2012), has its origins in the 1997 works of Mazur (Bergmann, 2012, Crouch & Mazur, 2001, King, 1993). ‘Flipping’ can be characterised under various pedagogical approaches based on substantial discourse including action learning (Burns, 2012; Critz & Knight, 2013); transformative learning (Brookfield, 1987; Mezirow, 2003), blended learning (Engel, 2014; Jokinen & Mikkonen, 2013) and problem based learning (Bonnes et al., 2017; Castelo-Branco et al., 2016).

Regardless of the true classification within educational paradigms, the Flipped method has been recognized as a means for the development of higher cognitive functions namely: problem solving, which has been a central concern in the education-practice divide identified within rural nursing education. Ensuring that students and rural health professionals understand substantive information and have the confidence without supervision is critical, but also recognition of culture and teamwork are important (Bourke et al., 2004). These higher-level cognitive education goals require engaged students and educators who can interact with students to produce activities that enhance cognitive learning of skills and appropriate learning assessment.

Abeysekera & Dawson (2015) accepted that differences existed in educational paradigms and pedagogies and thus proposed a broad definition of Flipped as a set of pedagogical approaches that had three essential features:

1. Move most information-transmission teaching out of the class
2. Use class time for learning activities that are active and social
(3) Require students to complete pre and or post–class activities to fully benefit from in class activities.

This definition is technologically neutral, meaning that movement of information transmission functions out of the class (instructor contact time) are not technology dependent, and can cover all forms of pre-class information transmission. In the words of Bergmann & Sams (2012), there is one significant question to ask when flipping: “What is the best use of face-to-face time with students?”

Classes are one of the important cornerstones of the flipping pedagogy because they play an important role in achieving an effective student-centric learning experience, which is important in order to develop a student’s higher cognitive skills. The conceptual heart of flipping is to improve student learning through focusing on the transmission of skills in class, a task where it was believed students needed greater guidance, rather than information transferal, where it was argued that students don’t need as much guidance (Edwards & Smith, 2005).

Both Bergmann & Sams (2012), and Abeysekera & Dawson (2015), definitions focus on the encouragement of students to engage in the pre-class learning, and the in-class activities. Abeysekera & Dawson (2015), place this definition within self-determination theory. This placement leads to their examination of intrinsic and extrinsic motivations and cognitive load to provide an educational underpinning of the Flipped methodology. They posited that self-determination meant the Flipped classroom supported increased extrinsic and intrinsic motivations through the senses of competency, relatedness and autonomy provided to the learner. Further tailoring the expertise of the class, and the enabling of self-pacing of learning would provide better management of student’s cognitive load.

Self-determination theory itself supports the skill of knowledge application and independence required of graduates to overcome the education-practice divide recognised in nursing education reviews (National Review of Nursing Education, 2002; United States Institute of Medicine Report 2010), that highlight industry and government demands of universities to provide students with demonstrable graduate outcomes in analysis and application of knowledge (Australian Qualifications Framework 2013). The improvement of higher cognitive, problem solving and critical thinking
skills has also been identified as fostering leadership and team work skills within rural nursing (Bourke et al., 2004; McLaughlin et al., 2014; Pierce & Fox, 2012).

Abeysekera & Dawson (2015) recognise research into Flipped and its effectiveness is in its infancy and is not an evidence-based approach as it is under evaluated, theorized and researched within educational constructs. Their research within education has been confirmed by Nijie-Carr et al (2017) and Tan et al (2017) analysis of nursing education research publications relating to Flipped. They conclude more rigorous scientific evidence based research to support educator’s adoption of this teaching method is required as their assessment of most reported studies lacked consistency in methodology, measurement techniques, and recognized identified outcomes, which often in scientific terms were perception of improvement. These criticisms of the research and placement of Flipped within educational paradigms does not mean it is not a method that can be utilized in the education of rural nurses, but the important issue is that this educational technique by its very definition means classes, not technology, the cornerstone of the Flipping pedagogy (Bergmann, 2012). This issue within the rural education online environment that currently exists, presents a problem of how can the learning and skills experience required as the focus of Flipped be presented to build skills in the rural environment for nursing?

**Difficulties and criticisms of the online solution from a Flipped methodology objective**

A primary complaint has been that the focus of online teaching is to provide material repositories of information and resources (designed for face-to-face learning) and discussion boards rather than a more holistic use of tools to create an ‘environment’ that encourages critical thinking and student engagement. These repositories do not of themselves structure or develop the student learning nor do they facilitate student engagement with material as repository approaches are themselves passive. Chen et al (2014) argue that for ‘Flipped’ to succeed it requires progressive network activities, engaging and effective learning experiences, and diversified seamless learning platforms for the
information transmission function. Importantly to note is that it also needs an interactive instructor who develops appropriate engaging learning experiences (Chen et al, 2014).

A second criticism has often been that online courses do not have the educational rigor of traditional course presentations and design for example in examination of online nursing courses (Sowan & Jenkins, 2013). The issues of course design and presentation have often been further criticized because of insufficient technical support or training to academic staff in facilitating and using the technology to its full advantage (Chen et al., 2014; Warelow et al., 2011) which leads to criticisms that student learning outcomes are not attained resulting in student attrition (Jokinen & Mikkonen, 2013; Warelow et al., 2011). The difficulty in recruiting, training and maintaining staff to provide and uphold the implementation of the pedagogy has been identified as a problem by Castelo-Branco et al (2016) in their examination of the implementation of the Flinders University problem based learning curriculum in four medical schools in four countries. Each jurisdiction faced similar problems with the university structure providing resistance to change from colleagues and from the faculty/university administration relating to costs and pressures from other university objectives.

The Flipped pedagogy is itself technology neutral as technology is only a tool used to achieve the final objective of creating critical thinkers who can apply knowledge (Belfi & Min, 2015; Bergmann, 2012). Technology can assist in overcoming the issues of isolation and geography in rural nursing education, but does not replace the essential facilitation of education being a transmission of experience and ability to utilize the knowledge and to bridge the education-practice divide.

**Rural nursing training and education: is a Flipped classroom the answer?**

Currently the majority of literature on ‘flipping’ implementation identify the key element of flipping as the separation of passive content material to self-paced online lectures and the utilization of various forms of assessment and activities for students to engage with the material when physically presence in class. Additionally, the studies reviewed by El-Banna et al (2017), Tan et al (2018) and Wu et al (2017) do not examine use of Flipped as a means of developing class interaction with remote students or how to provide this in a remote situation. The exception is a mention in
McLaughlin et al (2014) study of flipping a pharmacy course where 22 students of the total 162 students were connected to the class presentations synchronously by video conferencing from two satellite campuses. Their data and analysis though does not separate out the responses from those in the synchronous conferencing rooms from those in the physical class to provide separate data to analyse the effectiveness of Flipped classroom on the remote location students’ learning from those in the physical class on campus. However, if no difference was identified this would support the strength of Flipped as being an effective method for remote training where the ability to teleconference is available.

Dutile & Beauchesne (2011) recognise that clinical experience remains the foundation of practice disciplines like nursing training, but identify that educators are seeking alternative methods for providing clinical practice due to a lack of educators and competitive clinical sites for the practical clinical training. Pront et al (2013) acknowledge that clinical training in rural areas is understaffed resulting in clinical placements becoming an opportunity to make use of much-needed labour rather than being a highly valued educational experience. Thus a difficulty is time for training staff in the rural environment to develop the necessary skills and the provision of trained health professionals to provide appropriate training support (Bushy, 2002; Gum, 2007). The implications of this are that technology can assist in providing training for rural nurses but the preferred method would be face-to-face training in the rural environment which supports clinical practice methods (Sheppard & Mackintosh, 1998). The choice of an appropriate technological platform for the enabling of the interactive experience of the content delivery is important as rural nurses training will continue to be reliant on Internet access particularly for those who operate on their own in isolated health centres. Clinical placements as a method of training students equates to provision of in-class interactions. Communication with other health professionals whilst on clinical placement through interactive substitutes for the face-to-face class is important to ensure the Flipped methodology achieves the goal of higher cognitive learning within the physical contextual environment of the rural nursing.

The use of simulations through virtual reality using simulated environments that mirror real world experiences have been considered and used to varying degrees within rural nursing education.
Advanced forms of virtual reality enable immersion of the user with immediate auditory, sensory and visual feedback (Rogers, 2008), but most current educational forms adopt non-immersion techniques (Simpson, 2006). A major difficulty is that creation of clinical simulations have often been limited by the high cost of the technology (Harder, 2010) and the fact that funding to educational institutions within Australia has been reduced over the last 20 years. Furthermore, the use of technological platforms to operate these systems outside universities have been challenged by the availability of appropriate hardware and transmission technology.

**Conclusion**

Ultimately the purest form of Flipped class time and complete immersion via virtual reality clinical training or clinical training in the workplace is currently available for rural nursing distance education students. The literature in various disciplines including nursing identifies advantages of the Flipped method but the problems identified by Gum (2007) cannot be ignored and continue due to two fundamental reasons being a commitment to investment in staff and in technology. This ultimately is an issue for government funding, additional staff educators and technology to overcome the repository methodology currently used by universities for servicing rural nursing areas. The funding for support to provide clinical training in rural areas (so that trainees are not just absorbed due to lack of staff) supports the Flipped pedagogy that interaction with reality is the best teacher of theory, and application of knowledge. The Flipped pedagogy means technology supports learning but interaction provides the knowledge/skill interface to traverse the education-practice divide of the National Review of Nursing Education (2002) and the United States Institute of Medicine Report (2010). Flipped is one solution for the challenges faced by rural nursing education, but it does not provide a solution unless interaction with instructors is retained, and not substituted by information repositories.
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