Use of the Flipped Classroom Model in the Clinical Learning Curriculum for Third Year Nursing Students

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The specific aim of our clinical curriculum in the third year is to provide students with an immersive and integrative experience while working as part of a team. The flipped classroom provides this experience for the students and develops their critical and reflective thinking. Bloom’s taxonomy suggests that students need to be challenged by the educator to apply, synthesise and evaluate their knowledge. The flipped classroom is a model where the homework and the classroom lecture is reversed. Quizzes and videos are viewed by students in their own time before the class session so that the limited time in classrooms can be used for projects, exercises and group discussions. The value of the flipped model approach is the repurposing of classroom time into workshops so that students have the opportunity to enquire about content, seek clarification, test skills in application of knowledge and then have hands-on activities giving them a chance to interact with each other. Class time is used by lecturers for coaching and advising thus encouraging individual collaboration and inquiry. This helps students clarify their thinking about a subject and produce rich in-depth class discussions. Lecturers are able to give students feedback and respond to students’ emotional and social needs during class which helps with workload management. Student feedback has been generally positive with students commenting on having more time for self-directed learning and improving critical thinking skills. Comparison of student results and feedback from classes employing previous teaching methods with the flipped classroom model showed that students were more confident with clinical skills and this model created an opportunity for them to adopt their own learning style.

Background
There has been an increased need for a radical change in nursing education which challenges educators to design clinical learning experiences that will result in graduates prepared to practise in a changing health care environment (Benner, Sutphen, Leonard, & Day, 2010). These authors have suggested that there is a significant gap between nursing practice and educational preparation. One way of dealing with this issue would be introduction of context-based learning (CBL) where students are provided with a scenario, and undertake a student-led process of hypothesising, which ultimately results in the development of the students’ own learning objectives and skills (Trimmer, Laracy & Love-Gray, 2013). We have been using CBL as a teaching method in year three which helps integrate clinical reasoning with an emphasis on professional formation. The team has explored the use of the flipped classroom model to complement this method and achieve learning objectives of the clinical curriculum. High- and low-fidelity simulation, social media, role-play, problem-based learning, case analysis, and service-learning can all provide integrative learning experiences. The importance of clinical learning environments is that patient safety is a significant issue in these times of increasing health need and health resource constraints.

The use of advanced technology in the form of online resources and methods of delivery of course content to improve patient safety has been researched in the labs as well as in the simulation environment (North, 2011). Whitireia New Zealand is implementing the flipped classroom model and simulation as teaching tools in the clinical curriculum in year three. This is to enable students to utilize prior knowledge from years one and two and articulate this knowledge through active learning. The flipped classroom model also provides opportunities for the student to explore and demonstrate decision-making and critical thinking skills in a safe environment.

The clinical curriculum of the Bachelor of Nursing programme was reviewed in 2009 mainly due to the lack of clinical placements for undergraduate nursing students. The Oregon Consortium for Nursing Education model was then integrated into the clinical curriculum (Tanner, Gubrud-Howe & Shores, 2008). This model aims to “...increase capacity in schools of nursing by making best use of scarce faculty classrooms and clinical training resources” (Tanner, Gubrud-Howe and Shores, 2008, p. 203). The lab sessions and simulation are teaching modalities utilized to deliver the clinical...
education component of the curriculum. The designing of the lab workshops with incorporation of the flipped classroom idea needed specific measurable objectives that related to the course objectives (Horn, as cited in Jefferies, 2007).

The Bachelor of Nursing year 3 cohort were the group of random participants for this innovative change in content delivery with a focus on use of clinical judgement and nursing knowledge to provide safe health consumer-centred care. The specific aim of our clinical curriculum in the third year is to provide students with an immersive and integrative experience while working as part of a team (Gubrud-Howe & Scholessler, 2008). The flipped classroom provides this experience for the students and develops their critical and reflective thinking. Bloom’s taxonomy suggests that students need to be challenged by the educator to apply, synthesize and evaluate their knowledge (Beesley & Asthorp, 2010).

Effective teaching strategies
The flipped classroom is looked at as a pedagogical model where the homework and the classroom lecture is reversed. Quizzes and videos are viewed by students in their own time before the class session so that the limited time in classrooms can be used for projects, exercises and group discussions. The value of the flipped model approach is the repurposing of classroom time into workshops so that students have the opportunity to enquire about content, seek clarification, test skills in application of knowledge and then have hands-on activities giving them a chance to interact with each other. Class time is used by lecturers for coaching and advising, thus encouraging individual collaboration and inquiry (Strayer, 2012). Collaboration with the Online Learning Centre at Whitireia was an important aspect of bringing about this innovative change.

The online resources considered by the year three tutorial team were quizzes, a journal article related to the lab session topic for the day and a clinical workbook. The objectives set by the tutorial team for these sessions were that students:

- Demonstrate responsibility for ensuring that their practice and conduct meet the standards of professional, ethical and relevant legislated requirements (Decker, Sportman, Puettz, & Billings, 2008);
- Articulate nursing knowledge and demonstrate the ability to integrate this into nursing practice through the application of clinical judgement (Berragan, 2011); and
- Develop, implement and critically evaluate planned care that is health consumer-centred, responsive and supported by nursing knowledge, research and reflective practice.

The topics covered in the clinical lab environment are health assessments, respiratory assessments, wound care, intravenous fluid therapy, deteriorating patients, cardiopulmonary resuscitation, palliative and sudden death, crisis situations and diabetes. We have a large cohort of third year students and running scenario-based clinical teaching sessions is a challenge. Any simulation experience is more effective with small groups of not less than three and not more than 12 students, as smaller groups can be threatening and larger groups can cause group members to avoid participation. The recommended group size is 3-6 participants (Medley & Horne, 2005; Nehring & Lashley, 2010).

The group of 60 students are divided into eight groups of 7-8 students with each group rotating through four simulated scenarios. The scenarios are preceded by lectures and discussions of provided readings, providing the students with critical thinking resources and tools to use in the scenarios. A debriefing was provided at the end to ensure that all participants contributed actively to the scenario experience. We have found that these simulated scenarios are best run for 60 minutes, including debriefing time (Lapkin, Levett-Jones, Belchambers & Fernandez, 2010).

The flipped classroom model was evaluated via a questionnaire. Some comments from students were:

- I like how [tutor name] gave us just 1 relevant article to read, gave time to do a comprehensive preparation. The presentations were clear and explained in a way I was able to understand. I found the whiteboard diagrams very helpful as well. Nice to finish class earlier and still achieve learning objectives.
- The quiz beforehand is helpful to show gaps in learning and boost confidence of knowledge retained.

Integrated learning styles
Because students have not had the repetitive practice for core skills due to the limited clinical experience, the simulated lab scenario sessions are a significant part of the clinical curriculum at Whitireia. Issenberg and McGaghie (2002) state that the use of a spiral curriculum is an efficient approach for clinical skills training so integration of clinical teaching tools like scenarios allows students to apply skills at an increasing level of complexity (Issenberg & McGaghie, 2002; Maran & Glavin, 2003). Bergmann & Sam (2012) suggest that
videos and quizzes are powerful tools for teachers that help to share, create content and also improve practice. Bloom’s revised taxonomy (Anderson & Krathwohl, 2001) indicates that students complete the lower levels by gaining knowledge and comprehending information before the start of the class. This is considered the cognitive component while the higher-level thinking and analysing is done in class focusing on the application of this knowledge in the scenarios. Perhaps the assumption of the flipped classroom or any of the new instructional models used is the fact that learning is most effective when the learner is actively involved in the understanding and the application of understanding to a real situation which is the main objective of the lab sessions (Beesley & Apthorpe, 2010)

There are numerous methods of implementing the flipped classroom model. The online quizzes are interspersed with the activities in class to test what students have learned, helping with evaluation processes as well. Discussions in class help students to collaborate and create and also to put into practice what has been learnt in theory (Tomlinson & McTighe, 2006).

Comments from students who represent a multicultural group are:

I found the session well planned and [tutor’s name] method of drawing diagrams and linking bio to patients and clinical practice as well as class questions and discussions was really good for my learning style. It was very interesting and everyone was engaged. I love the flipped classroom model as it works well for my learning style to pre-read and be able to engage and understand in class - please don’t change it back.

Another common feeling was that it helped them to read the PowerPoint before class and refresh their knowledge. It becomes more clear and understandable in class:

The flipped classroom model works in that I was familiar with the subject before the class i.e. the class session solidified my understanding.

Reading the material and completing the workbook exercise before the lecture helped me to prepare for the lesson and understand it better.

Sustaining capability

The literature reinforces the sense that the flipping technique is useful when seeking to optimize class time, support the development of higher-order thinking skills, and enhance teacher-student and student peer-to-peer interactions. The success of a flipped approach hinges on the synergy between instructor and students and requires sustained motivation and contribution before, during, and after live instruction. When used appropriately, flipping the classroom is a valuable addition to higher education practice as evidenced in the research. Hybrid programmes have a vast variety of potential benefits to universities as they allow institutions to use classroom space more effectively. The instructional activities are hosted on-site, giving institutions the option to accommodate more sections of a single course (Tomlinson & McTighe, 2006). As a result, a smaller number of staff can run class schedules and potentially enrol a greater number of students. Consolidated use of classroom facilities will in turn decrease an organization’s operating costs significantly in the long term. With changing student dynamics, hybrid degree programmes are becoming increasingly popular for students and universities alike. Students can reduce time-consuming trips to campus but still benefit from face-to-face instruction (Berrett, 2012). Meanwhile they allow educational institutes to be more effective in the use of classroom space and to reduce costs.

Using student voice to inform decision-making

Lecturers have expressed a sense of achievement and are pleased to have had the opportunity to mould student’s minds through these sessions giving them the ability to critically think as well as use clinical judgement in their scenarios (McCallum, 2007). There is a huge benefit from teaching in this new concept because we are researching topics and looking for the most updated information. This also helps us to identify any gaps in existing models and helps stimulate research ideas (Duncan, 2006) because creating and imparting knowledge are complementary activities (Houston & Lin, 2012).

The most important element of a good teaching session is restructuring the content into manageable parts to encourage an active learning environment. Motivation is a key component of any learning style and this was emphasized in our lesson plans (Anderson & Krathwohl, 2001). Having a very motivated group of students made this transition into the flipped classroom idea for 2014 and 2015 easy. It is fulfilling to know that students are using their higher thinking skills of analysing and interpreting in these situations. Overall, I am passionate about teaching and I can see huge potential in the flipped classroom model for student success outcomes.

Students commented that the quiz and the workbook were really helpful and gave them a better understanding of the class session.
The assessment quiz was really helpful as was the respiratory assessment booklet and diagrams during the lecture helped with explanation.

Generally, we found this method very helpful as it gave us a great overview prior to the labs particularly acid base balance helping link theory to practice. The quiz was really great to get thinking about respiratory systems. The research article and guide for pre reading was very informative.

One student reported that

…the sessions were good and clear to understand even at a fast pace. We also enjoyed the time out of class for pre reading which makes class discussions clearer.

Discussion
Providing a high fidelity simulation-based workshop along with the weekly lab sessions provided the year three Bachelor of Nursing students an opportunity to assess, recognize and respond to patient deterioration. Starting the day with pre-reading and a PowerPoint allows students the opportunity to rehearse their technical and clinical decision making skills in a safe realistic environment without compromising patient safety (Endacott et al. 2010; Good, 2003, Weaver, 2011). The purpose of incorporating the flipped classroom was to encourage and facilitate active learning by focusing on the higher order thinking skills like analysing, synthesizing and evaluating (Bullard & Felder, 2005). It is important to have a structured orientation plan for students prior to simulated laboratory sessions because simulation or clinical learning pedagogy is based on the principle of constructive learning which means that students integrate and consolidate knowledge by repetitive practice (Seropian, Brown, Gavilanes & Driggers, 2004b).

Traynor, Gallagher, Martin and Smyth (2010) found that 96.7% of students in their third year who were embarking on their final placement agreed that scenarios allowed them to confidently and safely assess acutely ill clients and that it was a good way to test clinical judgement skills. From the qualitative data, students expressed that the experience helped them to recognize deterioration through clinical judgments. McCaughey and Traynor (2010) conducted a descriptive survey which evaluated the role of medium fidelity simulation as a tool to prepare third year nursing students for practice and assisting them to link theory to practice. Houston and Lin (2012) suggested that the FLIP can be viewed as Focusing on your Learners by Involving them in the Process. One of the important goals of the flipped classroom is to explore strategies beyond the classroom as the primary way for delivery of information and structuring of class time.

The potential barriers that we considered while implementing the flipped classroom into the year three curriculum were the number of students, the different skill levels of the students and the faculty’s competence with equipment and using simulation as a teaching approach.

The barriers of this approach are that if the session is not planned carefully, you will not obtain the full potential from the students. Time needs to be allocated to teaching staff for efficient planning of sessions and pre-reading material. So introducing this method needs extra resources like preparation time as well as instructor training, particularly for less experienced staff within the organisation. Another barrier could be students’ perception that it is safe to skip a class and hence they miss out on the real value of the hands-on activity. Also, students who do not have immediate access to online resources due to financial constraints may be disadvantaged (Houston & Lin, 2012). The resources we used were not extravagant and required assistance from the online team for setting up resources on Moodle.

Conclusion
Both the students as well as the teaching staff acknowledged that the students were very motivated and interactive as compared to sessions that were held in the traditional way.

Flipped classrooms allow for a variety of learning modes; educators often physically rearrange their learning space to accommodate the lesson or unit, which might involve group work or independent study. They create flexible environments in which students choose when and where they learn. Furthermore, educators who flip their classes are flexible in their expectations of student timelines for learning. They evaluate what they need to teach and what materials students should explore on their own time. In the flipped learning model, there is a deliberate shift from a teacher-centred classroom to a student-centred approach, where in-class time is meant for exploring topics in greater depth and creating richer learning opportunities through various student-centred pedagogies. As a result, students are actively involved in knowledge formation through opportunities to participate in and evaluate their learning in a manner that is personally meaningful.

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