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Flipping the Learning: An Investigation into the use of the Flipped Classroom Model in an Introductory Teaching Course

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With a classroom full of millennial learners, it is essential that teacher educators adjust their pedagogy to meet their students' needs. This study explores the use of a flipped classroom model to engage preservice teachers in an Introduction to the Teaching Profession course. In addition, it explores the need for teacher education coursework to model innovative teaching strategies, such as flipped classrooms, in an effort to prepare preservice teachers for future students. Results indicated that students displayed a higher level of reflection and inquiry in their coursework and a greater number of instructional strategies were modelled within the course.

Introduction

The integration of technology into the higher education classroom presents an opportunity to transform traditional pedagogy so that it reaches millennial learners. In teacher education, an additional opportunity exists; through the use of innovative teaching models that capitalise on technology use, teacher educators can seize the opportunity to arm preservice teachers with the pedagogical skills and strategies they will need to engage their own students. Not only is it necessary to engage students in coursework so they can have a rich experience in their teacher preparation program, but it is essential that teacher educators in colleges of education remain aware of the changing nature of education and prepare students accordingly. This is a challenge on multiple levels. To plan for what the next generation of students will need is difficult to comprehend, let alone address thoroughly. The notion that higher education

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teacher educators must begin to employ pedagogical models in their courses that capitalise on the technological mindset of millennial learners is the basis of this inquiry. Simultaneously, teacher education coursework must adjust to focus on new and innovative models of teaching, such as the flipped classroom, to prepare preservice students to teach the students they will encounter. The purpose of this inquiry was to examine the construction and initial implementation of a flipped classroom in an Introduction to the Teaching Profession course. Particular attention was paid to the management strategies used and how this model impacted on engagement in the classroom and built a broader understanding of instructional strategies.

Teaching the Younger Generation

Prensky (2008) discussed how the historical purpose of school was to educate students about the world outside of their own small town. Teachers opened the eyes of their students to places they had never seen, languages they had never heard, and stories that were timeless. Prensky went on to discuss the fact that many students come to school with knowledge that they have been gathering from pieces of technology since birth. The students in today's higher education, as well as in K-12, classrooms are "plugged in" to a wider world, full of instantaneous knowledge, communication, and collaboration. The only place where they may not be able to embrace this new and exciting world seems to be school. The current set of traditional pedagogical models may not integrate technology in ways that make sense for students. The disconnect between how students learn out of school and how they learn in school can lead to boredom, passivity, and, ultimately, a decreased amount of learning (Roehl, Reddy & Shannon, 2013). One of the most effective ways to teach preservice students how to engage their future students is by engaging them through their own coursework. The millennial learners are individuals born between 1982 and 2002 (Wilson & Gerber, 2008) and, from a very young age, have been engaged with information technology. These so-called "digital natives" often have access to information at their fingertips and prefer to learn in active and collaborative environments (Prensky, 2001). This assumption means

teacher educators must adjust their own curriculum in an effort to meet the needs of millennial learners while preparing them to teach the next generation.

Understanding the millennial learners in higher education is essential to maximise their learning potential in the classroom. However, for teacher educators, it is also imperative to keep focus on the types of classrooms that preservice teachers will be entering. The use of computers in classrooms has a long history. The United States National Center for Education Statistics (2010) found that 97% of their classrooms have computers in them with 93% having internet access every day. In addition, 40% of teachers in the United States report using computer instruction as part of their curriculum often. These statistics paint a picture where, regardless of the access students have to the Internet at home, students in developed countries can consistently connect at school.

Beyond computers in classrooms, it is significant to note the growing involvement in distance education that is occurring in public school districts. In 2009, 55% of districts across the United States have students enrolled in distance education courses, with the majority of those students at the high school level. Distance education in public schools has grown steadily since 2003 and new teachers need to be prepared for the notion that students are already comfortable with online, independent learning in K-12 and may actually prefer it (NCES, 2010). Today's preservice teachers are preparing to teach students who are often fluent online learners and have spent most of their life integrating technology into their own learning. Are teacher preparation programs preparing them to reach these learners? Are teacher educators adjusting their pedagogy to include the modelling of instructional strategies that support flexible learning through technology?

Exploring the Flip

A flipped classroom delivers the content to students outside of the classroom using taped lectures, videos, or other pieces of technology. What would traditionally be considered the "teaching portion" of the

class session now occurs in the students' own time. When students go to class, they participate in application activities using the content they have watched or read (Tucker, 2012). This model is a particularly good match for teacher preparation coursework because it encourages student ownership over their own learning, and simultaneously frees up class time to expose preservice teachers to myriad instructional strategies during the application of the content they have learned. As modelling is seen as 'best practice' in the field of education (Conklin, 2008; West & Graham, 2008), it is essential that teacher educators build in time to highlight and use the instructional strategies that consistently increase student learning. Additionally, it addresses the needs of millennial learners by allowing them to learn on their own time and integrate technology in an authentic manner.

Although research on the impact of flipped classrooms on student achievement is in early stages, benefits such as student engagement, increased student-teacher feedback, and self-paced learning have been well-documented in the literature (Goodwin & Miller, 2013; Roehl, Reddy, & Shannon, 2013; Sadaghiani, 2012). These outcomes create the classroom environment that teacher educators strive for and hope that their students will recreate in their own classrooms. Again, the flipped classroom creates alignment between what the teacher educator models and what the teacher educator expects preservice teachers to be able to do.

Higher education classes across the United States have documented increases in student engagement, preparation, and achievement using the flipped model. However, it appears that very little has been done in applying this model to a teacher education course, as most courses have been in the sciences (Sadaghiani, 2012; Steed, 2012). Modelling innovation and creativity for preservice teachers should be the foundation of any education class (Goubeaud & Yan, 2004). Coursework is the most valuable opportunity for them to learn from experts in their field. As instructional strategies often need practice in order to be perfected, students benefit greatly from seeing an expert example. It is not enough to read about cooperative learning and problem-based learning; students need to experience these

models firsthand. In a time of differentiated instruction, it is essential to develop a plethora of instructional strategies that can be used to engage students in ways that create ownership over their own learning on their own time. The flipped classroom is one such strategy.

Method

Guiding Questions

Three inquiry questions guided this investigation into the use of a flipped classroom in an introductory education course.

- How does using the flipped classroom model impact on the engagement millennial students have with course topics?
- What are the management strategies necessary for successful implementation of the flipped classroom model?
- How does the flipped classroom model build a broader understanding of instructional strategies in preservice teachers?

Beginning with the existing literature in the field and the inquiry questions, the process and decisions made while building a flipped classroom for an introductory education course were carefully documented through versions of syllabi development and professor notes. Reflections, challenges, and celebrations were documented in weekly journals and collaborative emails to peers. Three informal classroom observations focusing on student discussion were done by the professor. In addition, attendance, assignment completion and discussion board posts were collected to assess the overall impact of the model in this course. Lastly, this preliminary investigation will help define future research parameters in this line of inquiry and identify areas of research still needed.

Discussion board notes, journals and observations were reviewed and coded according to the categories of engagement, management strategies and instructional strategies. Initial findings were discussed with the participants – this method of respondent validation was used

to increase validity of the findings and avoid bias (Maxwell, 2005). In the role of participant observer in this study, the author regularly discussed the study with knowledgeable peers, or "critical friends," to ensure findings were accurate and to overcome obstacles in the study (Anderson, Herr & Nihlen, 2007). Journals and syllabi version were also used to create a timeline of decisions made during construction of the course.

Constructing the Flip

Once the decision was made to implement a flipped classroom, defining what this model would look like in an education course was the next step. The Introduction to the Teaching Profession students were the target audience for this model as it was decided that they would benefit most from outcomes such as student engagement and self-paced learning. The students taking this course are often in their second year of college and have either recently decided to be an education major or are considering it as a possibility. It has always been of goal of the author to present introductory students with a realistic view of the teaching profession so they can make an informed decision about whether this is a career they want to pursue. Introductory courses can have a significant impact on whether students choose a career in the field of education (Jaschik, 2013), making it a perfect place to highlight some of the innovations in teaching that are currently taking place.

In the literature, there is some level of agreement to flip one unit in a course to test the model on students (Steed, 2012). In this course, there was concern about students buying into the model and the negative impact of an inconsistent structure within the semester. The author of this paper, as a professor, made the decision to go "all in" and flip the entire semester to get a true sense of the impact this model might have on students. This meant that every chapter covered in the introductory text for the course would have a taped lecture and "at-home" activity and every class that students attended face to face would be an active learning experience. By flipping the entire semester, the model would truly be executed with fidelity and the

students would have a rich lesson in experimenting with innovative teaching.

Exploring technology was the next decision for the author. Our university currently uses Blackboard as a learning management system and the tools provided within the system were very useful to a flipped model. There were particular objectives and questions surrounding the management of this system detailed in the following sections.

Outside the Classroom

The first challenge was determining the best method for taping lectures and delivering content to students outside the classroom. The web conferencing tool Blackboard Collaborate was chosen to tape lectures as it had three necessary components for this model; audio, video, and the ability to display a presentation or application share. A bonus to this tool was that the lecture could be converted to an mp3 or mp4 so students could access the lecture from whatever device they wanted to use. The vision of students listening to a lecture while working out or watching the presentation on their device while waiting for a bus completely aligned with the flexibility in curriculum access of the flipped model.

There was a series of trial videos completed before taping lectures, checking for sound and video quality. An unintended outcome of these trials was the increased clarity of the taped lectures. Lectures were shorter in length and contained less superfluous information than in-class lectures. Brunswell and Horejsi (2013) discuss this as a form a professional development for teachers. Longer lecture content can be delivered more efficiently because instructors focus on delivering a quality video and reduce tangents and other unrelated information. Taped lectures ranged from 20-30 minutes (significantly shorter than traditional in class lectures) and often included additional content for preservice teachers to read or watch, such as classroom videos, pieces of documentaries, or student interviews. Much of this additional content used to take place within the classroom, and a discussion usually followed. However, in this

model, one of the objectives was to free up as much in-class time as possible for active learning and the use of additional instructional strategies; therefore, anything that students could do on their own time was included as part of the taped lecture.

Lectures for the next chapter were taped directly following a class meeting. This allowed for references to discussions that took place in class and kept the continuity of the course intact. For example, in a class discussion on multiple intelligences and IQ testing, many students shared personal stories about their own learning styles, strengths and weaknesses when it came to learning in a classroom. Their insights about how their former teachers either capitalised on their strengths or ignored them were an important segue into our chapter on students with special needs. Referring back to key points in that conversation throughout the next taped lecture helped students to see connections within topics and build their learning.

The last activity that students needed to complete before class was a discussion question. In order to ensure that students reflected on the course material and came to class prepared for an activity, they needed a space for reflection that also allowed the professor to view and record learning. In addition, a way to document who had watched the lecture in its entirety was helpful for taking "attendance." The answer to this was a creative form of discussion board posting. Within each lecture, there was an embedded discussion prompt that students needed to listen for and write down. As the objective was to make sure students were actively listening, the prompt was not listed on a slide and the location varied within the lecture. The placement depended on what they were to reflect on and was given out where it was appropriate. Students were required to watch the lecture and respond to the discussion question by midnight on the day before class met. The professor could log into the discussion board before class, have a read through the postings and gain an instant idea of what the students took away from the lecture, where they needed support and what misconceptions needed to be addressed. This was invaluable to creating a successful learning experience in class and required students to be active listeners not passive recipients of knowledge.

Inside the Classroom

As much of the 'traditional' learning was taking place outside of the classroom, the actual challenge for this professor was to engage students in authentic and meaningful activities that deepened their knowledge of both content and pedagogy. When this course is taught in a traditional model, there is a struggle between "getting through" all the content and allowing students to experience some of the concepts in discussion or hands-on activities. For example, in an introductory chapter on educational policy, the professor previously used a large amount of time to explain the landmark policies that influence the education system in the United States. Students never got beyond learning when the policy was enacted, what was included and who was impacted. However, in the flipped model, students watched the lecture at home, investigated one to two policies that were particularly interesting and posted findings on the discussion board. When they came to class, they were prepared to engage in small group debates on the impact of those policies. Debate groups argued both sides of an issue and presented their findings to the rest of the class so each student could hear pros and cons of major policies in the United States. Students were passionate about their topics, highly engaged in learning and, for the first time, truly understanding how policy shapes a teacher's job. This activity highlights the deeper learning taking place and also shows preservice teachers the power of using instructional strategies like classroom debates within their own teaching. This is a prime example of the power of flipping your classroom.

Avoiding Pitfalls

Part of successful teaching is being able to anticipate what may go wrong in the classroom. Using a new teaching model, this is particularly relevant, and it was necessary to explore online management strategies that would both lead to the intended outcome of student learning and also maintain academic integrity. One of the positive outcomes of using a flipped classroom is the time gained for students to reflect on their learning (Strayer, 2012). Students can watch lectures a number of times, think about some of the questions posed, and come to class with questions of their own. In a traditional

classroom, students were often still processing the content of the lecture when the class was quickly moving to the application of that content. The flipped model would provide more time for this processing, but there was concern that students would not reflect on their own learning if they read what other students were writing on the discussion board. The answer to this issue was hidden in the functionality of the discussion board settings. Blackboard discussion board contains a setting that allowed the professor to restrict student viewing of posts until they have posted their own response. So, during this innovation, students could not view any other posts until they had listened to the lecture, heard the discussion board prompt, and responded independently. After posting on the discussion board, all responses became visible, and students could read the responses of their peers. This gave a clear idea of how each student in the classroom interpreted the lecture and reflected on the material without interference from any other student input. It also served as lecture attendance for each taped session.

Another pitfall to avoid was student confusion about their role in this model. The flipped model is not based on the lecture style used traditionally in higher education (Goubeaud & Yan, 2004), and the students needed to fully understand their role in this approach (Pierce & Kalkman, 2003). The professor used the Blackboard messaging system to send reminders and technology tips to the class every other day for the first few weeks. The goal was to get students into a routine: lecture posted on Thursday afternoon, post response by Tuesday, attend class prepared to work on Thursday morning. This cycle repeated throughout the semester, so students always knew what to expect. In addition, careful attention was paid to students who were absent, late or had missed a discussion board posting. Students received personal emails from the professor in the first few weeks to highlight the importance of their participation in this course.

As veteran teachers know, it is often the structure and management of a classroom that can have the most impact on student success. Strayer (2012) noted these themes of student confusion in his work with flipped classrooms, and the goal was to create a clear set of

instructions that were consistent throughout the semester. The hope was that this increased clarity would carve out additional class time for the application of content.

Results and Discussion

Addressing the Inquiry Questions

The first inquiry question focused on how the flipped model impacted on the engagement of students in this course. The first few weeks of this investigation required a high amount of communication between the professor and students as technology glitches were worked out and instructions reinforced. Open feedback sessions revealed that there continued to be sound quality issues within the taping that needed to be worked out. The location of lectures on the learning management system and the devices used to record them needed to be changed so students could access material with ease. Despite those challenges, every single student watched the lectures and posted their response to the discussion board within the time given to them. Students had the ability to watch lectures in various formats (mp3 and mp4) and every student in the course easily located a device to access the lectures. In fact, one student mistakenly watched the wrong lecture and posted incorrectly and, after realising his error, attended during office hours to prove he had read the correct chapter and could participate fluently in the group activity. The drive to prove he was on track with expectations was impressive and something that was an unexpected outcome of experimenting with this model. This student began to take ownership over his own learning quicker than anticipated and rose to meet the challenge of the flipped model. Students also indicated a high level of reflection and making connections within their discussion board postings. Within one taped lecture, students were asked to watch a video documenting Jane Elliot's classroom experiment, A Class Divided, and then reflect on their thoughts and post. Five students reported within their posts or in class that they had watched the video multiple times that week, showed it to family members and/or had conversations about it outside of class with peers. One student addressed this deeper level of learning in his own post:

> I watched the video several days ago and then allowed the information to marinate in my head for awhile. Still a few days later the lessons learned are powerful…it almost seems silly that we do not do something similar to this in our classrooms now. Are we too sensitive and worried about being politically correct? After only watching about 25 minutes of video, I had to question some of the beliefs I have. It really hit the mark when one of the children spoke about the feeling of helplessness and that nothing good could happen. This was only in one afternoon…as I develop my skills as a teacher in the next few years I will find a way to incorporate cultural diversity into my teaching toolbox.

As more discussion and collaboration took up the bulk of class time, the higher-level questions from students in class, as well as their answers, indicated that they had engaged in reading set texts as well as additional texts. In an activity on creating accommodations and modifications for students with disabilities, groups of students used their knowledge from the text to create a successful space and curriculum for a special needs student. In the past, it had been apparent that students used their own background knowledge to inform this activity because the ideas were often recreations of older inclusion practices they had most likely seen occur within their own school experiences and were not the knowledge and practices described in the text. However, in the flipped classroom, students asked more questions about what "was allowed" as far as a modification, pushing the boundaries and creating new and innovative ideas to meet the needs of these students. While it is not possible to answer the question as to why this might be, it is possible to infer that students had ample time to grasp this new knowledge, reflect on what it means to them as a learner, and be able to apply it meaningfully in class. The increased depth in the outcome of this group activity, as well as others, illustrates what can happen when students understand and reflect on the content prior to class.

The second inquiry question addressed the management strategies needed to implement the flipped model successfully. The details of this process have already been discussed, but it is most important to note that the parameters set for students were easy to understand and that all students came to class prepared to engage thoughtfully in

what they had learned from the readings and videos. Teacher educators often spend a portion of each class ensuring students understand the information, getting a feel for the preparation level of the students and filling gaps in knowledge. In this scenario, students responded to a discussion board prompt tied to the work they were about to do in class. By reading those prompts before class begins, the professor walks into class knowing how well students have understood the chapter content. This quick formative assessment is a true gain in efficiency and allows more class time to be devoted to authentic group activities that expand thinking and model instructional strategies for future use. While all of the management strategies needed for this flip were able to be found within the current learning management system (Blackboard), it is important to note that as innovative teaching models grow, so should the capabilities of the systems implementing them.

The last inquiry question focused on how the flipped classroom could foster the awareness of instructional strategies in preservice teachers. Modelling instructional practices for preservice teachers has become a goal of many teacher education programs (Goubeaud & Yan, 2004). While this question will be addressed in future research, the beginning stages of awareness have emerged. In the latter half of this course, students are required to use what they have learned about teaching to plan and implement activities to teach topics to their peers. Working with a small group, students have traditionally created a PowerPoint presentation of information and shared that work with the class. It is argued here that the presentations did not promote active learning, but they directly aligned to the model they have seen used in their previous coursework. However, in the flipped model, learning is taking place outside of the classroom, so students need to think about how they can best engage their peers in active learning when they come to class. The challenge becomes how to teach their peers, not what to teach them. Students used strategies such as class debates, scenario-based role playing and small group discussion based on videos. The hope was that preservice teachers would continue to use the strategies they had seen modelled for them and be able to engage their own students in ways that make it easier for them to learn.

Flipped Classroom as Professional Development

Perhaps the most surprising outcome of this systematic inquiry into the construction and implementation of a flipped classroom was the professional growth experienced by the author as a teacher educator. It was necessary to learn more about technology and the tools available to teach preservice educators in this course. Collaborative meetings with specialists to learn about Blackboard tools, as well as meetings with experts in video and audio equipment, occurred regularly throughout the initial planning and implementation. There was significant growth in the professor's knowledge about the capabilities of all the available tools in order to pinpoint which software or hardware was most appropriate for the intended objective.

However, an unexpected amount of learning took place in the development of the classroom activities for the in class portion of the course. As previously mentioned, a significant amount of time was gained by using this model and this required the careful and thoughtful planning of authentic class activities. The objective of a flipped classroom is that students are more engaged and active in their learning (Goodwin & Miller, 2013; Steed, 2012; Tucker, 2012). This new opportunity meant revisiting class activities and adjusting, expanding, or recreating the experiences to match the new, deeper knowledge of students.

This was both exciting and terrifying as a professor. With the opportunity to model best practices for students while teaching them introductory content, it was necessary to relearn some instructional practices and study new ones in order to create variety and excitement. The instructional strategies being modelled were named, discussed and documented for students each class. Thus, students would leave with a large amount of introductory content into the field of education and a plethora of instructional strategies modelled for them. Again, there is hope that this experience will impact on their future students and increase their strength as a preservice teacher by expanding their knowledge of pedagogy and their understanding of the teacher they need to be.

Reflections and Future Direction

A primary reflection from this inquiry relates to the classroom management strategies applied to the implementation of the flipped model. Some previous uses of the flipped model in higher education have resulted in student confusion (Strayer, 2012) and it is worth noting that teacher educators in colleges of education have a large amount of background in pedagogy and classroom management which may support the implementation of new instructional models. This background was a contributing factor in the organisation and management of the details of this flipped classroom. As the popularity of this model grows, more research should be done to examine how it can be managed successfully in the classroom. Specifically in the area of higher education, it would perhaps be fruitful to examine the different versions of management of the flipped model in faculties across a campus or between universities.
The flipped model gives the gift of time to a teacher educator. With the traditional lecture occurring outside of the classroom, the challenge becomes how to maximise the additional instructional time. There is plenty of information on the organisation of the portion of the flip that occurs at home with the students (Brunsell & Horejsi, 2013; Steed, 2012; Tucker, 2012). But with more time gained for teaching and learning in the classroom, there is more opportunity for depth and creativity. How are teacher educators who are using the flipped model using that time? With lecturing out of the way, what methods are being employed for student learning? Specifically in teacher education, where modelling is a best practice, the types of instructional strategies used can make a significant difference in student learning.

Lastly, this inquiry supports the need for teacher preparation programs to reflect on the job they are doing preparing preservice teachers for today's classrooms. As the gap grows between traditional pedagogy and the needs of "plugged in" students (Prensky, 2008), how are colleges of education reflecting, analysing, and adjusting their coursework and methods? New teachers rely heavily on the knowledge and skills learned in their teacher preparation program (Conklin, 2008; West & Graham, 2007). It is

critical that the courses they take be aligned with the job they will do in schools and the students they will need to serve.

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