FIRST-YEAR UNIVERSITY STUDENTS' PERSPECTIVES AND EXPERIENCES OF THE FLIPPED CLASSROOM STRATEGY IN A TECHNOLOGY COURSE

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Research suggests that the flipped classroom is a successful strategy for enhancing student learning. This qualitative study examined first-year students' perceptions and experiences of the flipped classroom for the delivery of a technology course at a Caribbean university. The discussion-focused flipped model was used, and data were collected using open-ended questionnaires, focus group interviews, and a review of the Blackboard Course Management System course statistics. The theoretical framework for analysis included Bristol's (2012) theory of plantation pedagogy; constructivism as espoused by Savery and Duffy (1995); and Bandura's (1995) theory of self-efficacy. Findings suggest that perceptions and experiences of the flipped classroom strategy were mixed, and students felt challenged by its use. Students participated minimally in online discussions, and few read online resources. Furthermore, classroom discussions were still mostly teacher directed as many students experienced a high level of fear and anxiety with in-class presentations. A reliance on educators as the main source of knowledge persisted, with reluctance by some to assume an independent role in their learning. We conclude that although students generally approved of the strategy, their experiences of schooling in an authoritarian, post-colonial education system challenge its effective use without additional support for students.

Introduction

Internationally, universities are proceeding with technology integration on the assumption that classrooms are populated with millennial learners who are comfortable with its use. The flipped classroom strategy is one approach that integrates content and technology to alter methods of instruction for increased student engagement and achievement (Enfield, 2013; Morgan, 2014; Vaughan, 2014). In the Caribbean region where classroom instruction has traditionally been largely teacher-directed (Layne, Jules, Kutnick, & Layne, 2008), pedagogies in new curricula at all levels of the education system now favour more student-centred, constructivist instructional

methods that encourage independent student learning. While innovative pedagogical adjustments are essential to meet the changing needs of students and technological advancement, there is often limited consideration of the ways in which students were taught before entering university and the effect these might have on successful curriculum innovation. This is especially crucial in teacher development programmes, since students' prior experiences and the beliefs they hold about teaching and learning can have an impact on the way they understand new information and react to change (Pajares, 1992). Pedagogical strategies such as the flipped classroom strategy are expected to transform the culture of classrooms and make them more active learning spaces. However, psychological, sociological, and pedagogical issues may impact on the degree of success that educators and learners achieve when new strategies are adopted.

The colonial history of the educational system of Trinidad and Tobago gave rise to traditional pedagogical approaches that focused on memorization of notes, with no opportunities for critical inquiry; promoted teacher-centred instruction based on examinations; and was characterized by a lack of student participation and low levels of social inclusion skills (Layne et al., 2008). In this regard, it is important for university educators to understand first-year university students' perspectives and experiences of the flipped classroom strategy. Most students at this level would have been educated in a post-colonial system at both primary and secondary school, and it is reasonable to expect that their experiences in the school system would have an influence on the way they respond to new pedagogical approaches at university level. This would be particularly applicable where instructional models differ significantly from those that were previously used to educate them.

This paper reports on a study that sought to provide insights into first-year university students' perspectives and experiences of the flipped classroom strategy. The researchers were also interested in uncovering some of the challenges that students faced with the use of this instructional strategy, especially since students were enrolled in a programme for teacher preparation and would carry their attitudes to technology use into the education system. The main research question that the investigation addressed was:

> *What are first-year university students' perceptions and experiences with the use of the flipped classroom as a strategy for enhancing learning?*

The sub-questions were:

1. *Do students perceive that the flipped classroom strategy enhances their learning?*

2. *What aspects of the flipped classroom strategy do students like?*

3. *What aspects of the flipped classroom strategy do students dislike?*

4. *What challenges do students experience with the use of the flipped classroom strategy?*

Background/Context

Trinidad and Tobago is a post-colonial society in the Caribbean. The education system has historically been modelled on the British school system because of the significant involvement of Britain as a dominant colonial power in the period prior to political independence of the twin-island state in 1962. Although independence was achieved then, many of the social and cultural institutions still exhibit remnants of the ties to the European colonial power.

The current study was conducted at the education unit of a university in Trinidad and Tobago. The programme for teacher development at this university was initiated in 2006, and offers a Bachelor of Education (BEd) degree in Primary Education, Early Childhood Care and Education (ECCE), Special Needs Education, and several specializations in secondary education. The Blackboard course management system (BbCMS) has been available for use since 2009, and teacher educators are mandated to use the BbCMS in their teaching at the university. In addition, a blended learning approach is advocated for all courses and the flipped classroom model is one of the options. The discussion-focused flipped model that was used involved the use of the BbCMS, in which video lectures, PowerPoint lectures, and reading material were posted and a discussion forum created. Students were required to view and read material posted and make presentations on particular sections. In addition, students were also required to prepare questions for discussion based on areas of difficulty. The discussion board was used for further discussions based on topics not adequately covered in class.

The Flipped Classroom as an Instructional Strategy

The flipped classroom, also sometimes referred to as the inverted classroom, is a new approach to improving instruction and student learning, as well as increasing student engagement (Bergmann

& Sams, 2012; EDUCAUSE, 2012). In the case of higher education, flipping the classroom generally means converting lectures into videos or other forms that can be delivered online, thus reserving class time for discussion, collaboration, and problem solving (EDUCAUSE, 2012; Tucker, 2012). In this scenario, students review lectures at their own pace before coming to class, and perform tasks that would normally be done as homework. According to EDUCAUSE (2012), students do not only benefit by working on problems together in class, but lecturers can more easily detect problems that students are having, and provide needed support.

The increased emphasis on higher-order thinking, team work, and problem-solving skills is seen as an important component in constructivist learning theory (Savery & Duffy, 1995). In this regard, many researchers suggest that the flipped classroom strategy allows for a more student-centred approach, which can replace the traditional lecture-based mode of instruction, thereby allowing students to achieve the larger goals of 21st century skills (Bergmann & Sams, 2012).

However, according to Manjinder (2012), the flipped classroom, as is currently being implemented in higher education, has not been able to replace the teacher-centred lessons with student-centred instruction. Several other researchers have expressed similar views. For example, Ash (2012) argued that flipping the classroom is the use of modern technology to deliver the same teacher-centred, lecture-based philosophy. This view is also supported by Tucker (2012), who suggests that changing the form of the lectures and placing them for viewing and access outside the classroom does not necessarily remove the teacher-centred nature of the instruction. This is especially so if lecturers maintain their original assignments and fail to embrace principles of collaborative learning and authentic assessment. In other words, unless methodology is radically altered, instruction can still remain a transmissive and passive form of instruction which suggests that the teacher has the knowledge and must pass it on to the students (Freire, 1970).

Strayer (2012) conducted a comparative study to determine students' level of satisfaction between a flipped classroom and the traditional classroom for an introductory statistics course. The findings of the research revealed that students participating in the flipped classroom were less satisfied with the flipped classroom teaching strategy than students who were taught using the traditional format. The study also found that students participating in the flipped classroom did not adjust quickly enough to their new learning environment. For example, some students were uncomfortable participating in group learning activities because they preferred working alone.

This study concluded that students may require more than a semester to adapt to the flipped classroom model and to adjust to its strategies.

The simplistic application of the flipped classroom to move from in-class lectures to pre-recorded online videos and lecture material is another example of how technology can change teaching without sufficient attention to the complexities of classroom dynamics or the diversity of learners (Manjinder, 2012). To avoid this pitfall, researchers suggest that emphasis should be placed on promoting authentic assessment and student-centred tasks, as well as on applying technologies that do not only promote content discovery but also communications and knowledge creation (Tucker, 2012). To achieve these outcomes, there needs to be careful planning and extensive readjustment of the didactic forms of lectures before flipping the classroom.

Theoretical Framework

This section focuses on the theory of constructivism as espoused by Savery and Duffy (1995); self-efficacy theory by Bandura (1995); and plantation pedagogy as advanced by Bristol (2012). These theories were used as tools to analyse first-year university students' perspectives and experiences of the flipped classroom strategy.

According to Savery and Duffy (1995, p. 1), "constructivism is a philosophical view on how we come to understand or know." In this regard, Savery and Duffy advanced principles of constructivist instruction that are pertinent to the type of curriculum innovation that the flipped classroom strategy aims to achieve, and in light of the philosophical orientation espoused by the institution where this study was conducted.

The first principle advocates that all learning activities should be anchored to a larger task or problem. This requires that any activities that are planned for students should be made very clear. For example, the assignments, tasks, and activities given to students should be part of an overall framework that brings together all the little tasks. Additionally, educators should support the learner in developing ownership of the overall problem or task. To comply with this guideline, the teacher should try to align the instructional goals and learning outcomes of the course with those of the learner. Another principle suggests the design of authentic tasks to make instruction more meaningful for learners. This requires that the cognitive demands of tasks assigned to students are similar to those that are required in the environment in which the students will have to apply the skills. This requirement is compatible with Savery and Duffy's (1995) fourth principle,

which is that the design of the task and the learning environment should reflect the complexity of the environment students would function in at the end of learning. In order to accomplish this, the teacher must ensure that assignments and situations created for learning reflect what students would be required to do on completion of the course of study.

Further, if learners are to be given opportunities to construct their own knowledge, they need to be allowed to take ownership of the process to develop a solution. Active involvement in the problem-solving process fosters ownership of the problem itself. The use of rote learning and procedures that encourage algorithmic thinking should therefore be discouraged (Savery & Duffy, 1995). It is thus crucial to design a safe and comfortable learning environment to support and challenge the learner's thinking, provide feedback, and support the different learning styles of students.

To counter entrenched pedagogies of transmissive models of instruction, Savery and Duffy's (1995) seventh principle of constructivist methodology advocates that students be encouraged to test ideas against alternative views and alternative contexts. If knowledge is viewed as socially negotiated, then a learning community where students can discuss and understand ideas is critical to the creation of an effective learning environment. This implies that the role of the teacher is to create social situations where students of varying levels of cognitive development can communicate, share ideas, and cooperate in solving problems. The successful implementation of all the principles outlined above requires educators to provide opportunity for support and reflection on both the content to be learned and the learning process. Support is provided when students are given the opportunity to work collaboratively, assist each other, engage in discussion, or are given feedback from teachers. According to Gensburg and Herman (2009), feedback is necessary because it gives students the opportunity to select out and obtain added information required to construct knowledge. These principles of constructivist teaching place the student at the centre of the learning process. In contrast to objectivist approaches, there is a shift in power from teacher to student.

The greater role that students are expected to play in constructivist methodology raises questions about their confidence and preparedness to assume responsibility for their learning. The concept of self-efficacy is useful to help us understand students' responses to changes in instruction. Bandura (1995) hypothesized that self-efficacy affects an individual's choice of activities, effort, and persistence. He argued that people who have low self-efficacy for

accomplishing a specific task may avoid it, while those who have high self-efficacy are more likely to participate. Self-efficacy theory proposes that people acquire information to evaluate efficacy beliefs from four primary sources.

The first source is enactive mastery experiences. According to Bandura (1994), mastery experiences are the most effective way to boost self-efficacy because people are more likely to believe they can do something new if it is similar to something they have already done well.

A second source of self-efficacy is through observation of others or vicarious experience. The observation of the successes and failures of others who are similar to one's self is a key contributor in this regard. Watching someone like yourself accomplish something you would like to attempt increases self-efficacy. Conversely, observing someone like yourself fail detracts or threatens self-efficacy. The extent to which the vicarious experiences affect self-efficacy is related to how much like yourself you think the model is (Bandura, 1994).

Forms of persuasion, both verbal and otherwise, also play a role in building self-efficacy. When people are persuaded verbally that they can master a task, they are more likely to accomplish the specific task, and this plays a significant role in helping them to believe in themselves. Conversely, when people are told they do not have the skill or ability to do something, they tend to give up quickly (Bandura, 1994).

Finally, physiological and affective states from which people partly judge their competence, strength, and vulnerability to dysfunction contribute to belief in their capability to achieve success. Stress, anxiety, worry, and fear all negatively affect self-efficacy and can lead to a self-fulfilling prophecy or inability to perform the required tasks (Pajares, 2002). Stressful situations create emotional arousal, which in turn affects a person's perceived self-efficacy in coping with the situation (Bandura, 1995).

The third theoretical position that informed our analysis is outlined by Bristol (2012), who argues that the concept of the colonial plantation economy has shaped the society's social consciousness, and influenced the form of democracy and the ideals and traditions post-colonial, independent societies embrace. She uses *plantation pedagogy* as a metaphor to explain how post-colonial governance formulates and implements education policy, and further suggests that although the colonial plantation no longer exists in Trinidad and Tobago, its ideology still contaminates the educational structures to influence a mode of pedagogical consciousness that

creates a "mismatch between the aims and aspirations of educational reform and classroom practice" (p. 97).

Bristol (2012) likens the role of the teacher in plantation pedagogy to that of an overseer. In this role, the teacher becomes the force who controls what is learnt, how it is learnt, when it is learnt, where it is learnt, who sits where, and who is given freedom to move around the class. As such, the teacher has the divine, unquestioned authority over learning, and has the power to make or break the future chances of the child in the class. This creates a relationship of fear and mistrust between the teacher and students as the teacher's work becomes shaped by practices of oppression (Bristol, 2012). This authority allows knowledge to be transferred in one direction—from teacher to student. In this regard, the teacher becomes a depositor of knowledge that is assimilated by students (Freire, 1970). This traditionalist position in the knowledge economy promotes the idea of teaching as a confrontation of two protagonists.

The elements of these theoretical positions—Savery and Duffy's (1995) principles of constructivist instruction; Bandura's (1995) self-efficacy theory; and Bristol's (2012) theory of plantation pedagogy—were interrelated to provide a framework for interpretation of the data.

Methodology

Method

This is a qualitative study that follows an interpretative paradigm based on ethnographic traditions. This paradigm gives a comprehensive description of how one perceives, creates, and interprets one's world. In this study, first-year university students are at the heart of the research process, and the findings are grounded in their writings and narrations of their experiences and perspectives of the flipped classroom strategy. As such, the use of multiple qualitative methods was the most effective way of getting answers to the research questions. The methods used included an open-ended questionnaire, focus group interviews, and analysis of the course statistics.

Data were first collected from first-year university students using an open-ended questionnaire. In the second stage, two groups of students were purposively selected to participate in a focus group interview, and a review of BbCMS student course statistics was undertaken. The main purpose for using an open-ended questionnaire was to allow 65 first-year university students the chance to give their views, using their own words to explain their perspectives and experiences with the flipped classroom strategy. This data collection method allowed us to get deeper responses

from the students and varied views of the issues involved. In addition, this method provided us with a list of students from which we were able to choose two groups of 10 students to participate in one of two focus group interviews.

Miles and Huberman (1994, p. 254) argued that the open-ended questionnaire allows for "the inclusion of a wide variety of voices in a dataset…and best informs the construction of a conceptual framework." Similarly, Creswell (2008) pointed out that "open-ended questions are asked so that participants can best voice their experiences unconstrained by any perspectives of the researcher or past research findings" (p. 225). Thus, the open-ended questionnaire was seen as an appropriate method to collect data in this study because it allowed responses from a cross-section of first-year university students, and also because it enabled respondents to express their views without being influenced by our perspectives. Further, respondents were free to articulate their views with the understanding that they could remain anonymous if they wished.

However, while providing a variety of opinions in a quicker time and in a more cost-effective manner, the use of open-ended questionnaires has several disadvantages. For example, open-ended questionnaires do not allow for further clarification of issues reported, and have a low percentage of returns and many incomplete answers (Cohen, Manion, & Morrison, 2008), all of which may prevent researchers from gaining a deeper understanding of the issues being studied. Although these disadvantages affected our use of the open-ended questionnaire to a small extent, the data collected were used in several important ways: to provide answers to the research questions; as a way of selecting the best participants who volunteered to participate in a focus group interview; and as a way of supporting the data collected through other methods.

Focus group interviews constituted the second method used to collect data. Interviews of this nature are a form of group interview where the reliance is on the interaction within the group, who discuss a topic supplied by the researcher (Cohen et al., 2008). Focus group interviews were also used to allow us to get reliable information from a number of students in a short time (Creswell, 2008). It also provided an opportunity for students who may have been previously reluctant to speak to provide additional information in a group setting. Hence the participants were able to "interact with each other rather than with the interviewer, such that the views of the participants can emerge – the participants' rather than the researcher's agenda can predominate" (Cohen et al., 2008, p. 376).

Focus group interviews are not without their drawbacks. For example, the group dynamics may lead to non-participation by some members and dominance by others; the number of topics covered may be limited; intra-group disagreement and even conflicts may arise; inarticulate members may be denied a voice; and the data may lack overall reliability (Cohen et al., 2008). The one drawback that manifested itself was the dominance of some students during the interview. However, with proper management of the session, this problem was minimized and valuable data were realized.

The use of course statistics was another method of data collection. At the end of the semester, we were able to gather data pertaining to the number of students who accessed the online material and lectures, and who participated in online discussions.

Sample

In deciding the best approach to take when dealing with sampling issues, Cohen et al. (2008) outlined four factors: the size of the sample, the representativeness and parameters of the sample, access to the sample, and the sampling strategy to be used. The selection of the 65 students was done using purposive sampling from a group of 158 first-year university students. Purposive sampling has been described by Wellington (2000) as sampling "done with deliberate aims in mind as opposed to a random sample or one chosen purely for its convenience and accessibility" (p. 199). According to Lincoln and Guba (1985), this method "increases the scope or range of data exposed as well as the likelihood that the full array of multiple realities will be uncovered" (p. 40). Thus, we hoped to get in-depth information from the experiences of participants in the sample, which consisted of 58 female students and 7 male students in two classes taught by the same instructor, who used the flipped instructional strategy to deliver an education technology course. Table 1 shows the number of students in each age group. The majority of participants were less than 26 years old.

To ensure that we adhered to all ethical standards, each of the students selected was given a letter explaining the aims and objectives of the study, the open-ended questionnaire, participant information sheet, and consent form.

Table 1. Age Range of Participants

Age Range	Number of Students
18–21 years	16
22–25 years	30
26–29 years	6
>=30 years	13

Purposive sampling was also adopted to select the 20 first-year university students who participated in the focus group interviews. Based on the analysis of the open-ended questionnaires and the students' stated willingness to participate, two groups of 10 students were selected to participate in two focus group interviews. Techniques used to ensure credibility or validity of the focus group process involved verbatim accounts of focus group interviews, use of recording devices to capture data, and participants' review of researchers' synthesis of interviews. In an effort to ensure confidentiality and security of data, the identities of respondents were anonymized in our writing by the use of pseudonyms. In addition, the audio recordings of all interviews were password protected and stored in an external hard drive.

Data Analysis

Data analysis is the "process of systematically searching and arranging the interview transcripts, field notes, and other materials accumulated to increase understanding of them to enable the presentation of what was discovered" (Bogdan & Biklen, 1998, p. 157).

The analysis of the course statistics was done at the end of the course in November 2013. The total number of students accessing the different course material available on the BbCMS was recorded. Students' participation in the online discussion was also recorded.

The open-ended questionnaires were sent out at the beginning of December 2013. When we received the returned questionnaires, we assigned each an identifier starting with R1, then R2, and continuing. We then followed the advice of Wellington and Szczerbinski (2007, p. 101), and immersed ourselves in the data to get an "overall sense or feel of the data." We began by reading through the responses of each returned open-ended questionnaire several times. We then circled the important segments and wrote in our thoughts, working methodically until all responses were completed. We then used the matrix-based method for ordering and synthesizing data (Ritchie,

Spencer, & O'Connor, 2003), which is a variation of the framework approach developed at the National Centre for Social Research in the United Kingdom. We produced a spreadsheet workbook with seven worksheets, one for each item in the open-ended questionnaire. In each worksheet, we created a matrix with the headings: Identifier, Response, Codes, and Categories, and then entered the information from the open-ended questionnaire into the first two columns (Identifier and Response) in the worksheet. We read the responses many times, highlighting the important segments with different font colours. The same font colour was used to highlight similar codes that represented the important segments.

Glesne (1998) characterized coding as a "progressive process of sorting and defining and defining and sorting those scraps of collective data (i.e., observation notes, interview transcripts, memos, documents, and notes from relevant literature) that are applicable to your research purpose" (p. 135). Based on the constant comparative strategies advocated by Wellington and Szczerbinski (2007), we began the open coding or categorizing of the data and the process of defining codes and their related properties.

We read each line of the data on the computer and typed in the codes we generated in the codes column. Each time we read the data, we added, modified, or deleted the names of codes on the list during the process. After performing the coding process several times, we used the codes generated to create categories. Generally, some categories were incorporated into broader categories. Some categories were rejected because they were less pertinent to our research questions. As suggested by Wellington and Szczerbinski (2007) in the fourth stage of the data analysis process, appropriate categories were integrated and refined to support responses to the research questions.

The two focus group interviews were held during the period December 15th to December 30th, 2013. The focus group interviews lasted between 45 minutes to one hour. This supports the view of Robson (2002), who warned that interviews can be time consuming, and that anything under half an hour is unlikely to yield any valuable information, while an interview that is over an hour may reduce the number of individuals willing to participate. In this research, we used recordings to improve accuracy and quality of data evidence (Wellington, 2000). We recorded the focus group interviews directly to a laptop computer using the computer's built-in microphone and the Audacity program (a free audio editing program available on the Internet). A folder was created in a portable hard drive and was used to store the two focus group interview sessions.

Each focus group interview was transcribed and then analysed. Another workbook was created with seven worksheets; one for each sub-research question. We again entered the headings: Identifier, Response, Codes, and Categories—and inserted the responses from the participants in the focus group interviews. The same process, as outlined above, was then followed for analysing the data obtained from the open-ended questionnaires. This system allowed us to keep the original data for each sub-research question together, thereby reducing fragmentation. Consequently, categories emerged from the data rather than being pre-specified. This process is consistent with the qualitative, interpretative methodological framework adopted in this study.

As reflexive researchers, we are aware that these categories represent only one of many possible truths of these first-year university students' experiences. In an effort to improve the trustworthiness of the research, the following steps were taken to ensure the quality of the research or the extent to which the data and data analysis are believable (Lincoln & Guba, 1985). We analysed the data independently and then compared the results. Wherever there were discrepancies, we reviewed the data and jointly analysed those pieces.

Findings

In this section we present findings for the course statistics, as well as for the main research questions, by detailing results obtained from responses to the questionnaires and the focus group interviews. Each summary researcher comment is supported by illustrative responses from participants to support the analysis.

The course statistics revealed that about 67% of the students accessed the site and downloaded the PowerPoint lectures and documents containing additional readings. However, fewer students (37%) either downloaded or accessed the video lectures. The analysis of participation in the online discussion board revealed that few students (18%) made significant contributions. The remaining students (82%) either agreed with statements other students made or did not make any posts.

The first sub-question was: "*What are first year university students' perceptions and experiences with the use of the flipped classroom as a strategy for enhancing learning?*"

Some students (66%) affirmed that the flipped classroom strategy enhances learning because they can learn from others and appreciate how they think. In addition, students felt that they could

get more involved in class discussions if they got an opportunity to preview material before class sessions:

"Yes. I can see how other students are thinking and learn from them."

"Yes it can enhance learning. Students definitely benefit if they read lectures or view videos before coming to class. It allows us to get involved in the discussion in a more in-depth way. I could also ask for things to be explained."

However, not all students subscribed to this view since some (51%) stated:

"I don't like to answer questions in class. I don't like to be in the spotlight."

"I don't like that method of teaching. I prefer the teacher do the teaching. I think I understand better that way."

When questioned about the aspects of the flipped classroom strategy that students liked, the following themes emerged in response to the second sub-question. Many students (69%) emphasized that the opportunity to control their learning and pace themselves was a positive aspect of the flipped classroom:

"I believe that having access to the material before is a good thing. I can read it anytime I want. I don't have to hustle to take notes in class."

"I can access the lecture anytime I want."

"I could play back the lecture as many times I like. For example, if I don't understand something I could play it over and over again. I can't do that in class."

Another positive aspect of the strategy that students identified was convenience. Some (39%) felt that the pedagogical approach allowed flexibility in how they managed their learning:

"I could stay home and look at the lectures."

"If I am absent I am still able to see the lecture."

Many participants (69%) felt that flipping the classroom was conducive to a more interactive and relaxed learning environment:

"I like the fact that everyone can make a contribution from what they understand. So even if something is unclear, it can still be raised and further discussed."

"[I like student] *engagement and the enthusiasm of students when presenting their point."*

"I enjoy the interaction in the classroom. The teacher student interaction when teaching is like open conversation."

"The interaction with classmates is somewhat more relaxed."

"The in class discussions are always enjoyable. It encourages students to think on their feet."

"Yes, interacting with the teacher and fellow students, saying what we think about the topics whether right or wrong, we learn if we make mistakes."

"I like being involved in discussions because I honestly learn and remember that way."

"Discussions can clarify any facts or points in which you were previously confused."

The strategy required students to make classroom presentation to their peers and in front of their instructor. Nineteen percent of participants expressed appreciation for the strategy as an opportunity to develop personal skills, including public speaking skills:

"It trains you to do public speaking."

"It helps in getting used to standing in front of a class and teaching a class."

"It also makes you or provides opportunity to practice presentation skills and perfect flaws with guidance (hopefully) from the lecturer."

Surprisingly, when the third sub-question asked participants about the aspects of the flipped classroom strategy that they disliked, 56% indicated that the idea of presenting in front of their peers and the instructor aroused a high level of fear and anxiety. Apart from the apprehension occasioned by having to manage a class presentation, students were also fearful about the possibility that they might be criticized, and that they would be called upon to answer questions, especially if they were unsure about the accuracy of the content:

"I do not enjoy the pressures of preparing for a presentation and going up in front of a classroom of individuals looking at me, waiting for me to say something wrong. It is just too much pressure and anxiety."

"I don't like to be asked questions especially if the information is unclear to me."

"I dislike this strategy because I don't like the idea of coming in front of the classroom and speaking to everyone."

"Being in front of the class is quite nerve wrecking."

"I have a huge fear factor of speaking in front of older persons."

In addition to these factors, some of the participants (33%) lacked confidence in their colleagues as reliable sources of knowledge, when judged against the store of knowledge that they thought a lecturer possessed. Some also thought their peers lacked crucial communication skills to teach them effectively:

"Students cannot articulate themselves well, to the disadvantage of the student audience; you don't learn much."

"Peer teaching may be ineffective, as some students are soft-spoken etc."

Despite the fact that participants thought that the flipped classroom strategy allowed them greater control over the pace of their learning, just over one-third (39%) commented that they were not comfortable with the decreased face-to-face interaction between instructor and students. They felt that the new arrangement reduced opportunities for immediate feedback and direct communication with their instructor:

"The time gap between looking at the video or reading the posts may be too long [before coming to class] *and I cannot remember some of the things I wanted to ask. If I am in a lecture I can ask questions right away."*

"Viewing the video is not the same as being in class. Other issues arise in class while the lecturer is presenting which may not be related to the course but helps overall."

"Lectures are more interesting because there [are] *more discussions and activities."*

"I hate almost everything about this method but on the other hand I love when a teacher or lecturer explain and give fun activities."

In response to the fourth and final sub-question concerning the challenges they experience with the use of the flipped classroom strategy, the predominant themes were again those of fear and anxiety:

"Anxiety, nervousness, panic attacks and recently slight asthma attacks."

"[Too] nervous to learn while presentations are taking place."

"Having to do in-class presentations is very nerve wrecking."

"Inability to fully transfer the content at hand due to fear."

"When called upon I get nervous, and say any foolishness, not that I don't know what I'm about but fright just takes over."

Several students (31%) wished they had prior knowledge to make better use of the information in the course materials provided for them on Blackboard. They found it difficult to manage the amount of information independently and confessed to being overwhelmed:

"I like to know or have prior knowledge of a topic before I can explain it to the class. If I don't have a clear understanding I would not speak in class."

"So much information available, it is a bit difficult in choosing the most appropriate as you do not have prior knowledge about the given topic."

"Sometimes I don't understand what I read well because I never did it before."

"Some of these things are new to me. So it tends to be somewhat challenging."

"Reading and understanding new information without prior knowledge."

Some of the challenges students experienced related to challenges of workload and lack of time to adequately prepare for the ensuing classroom presentation and discussion:

"Sometimes I do not have enough time to prepare."

"Limited time to prepare."

"In some courses, too much reading is required for the following week. As a result time management is becoming problematic for allocation to other courses."

"Too many things to read before class. Difficult to view the videos or read everything before coming to class. Have other subjects to prepare for."

"Getting prepared to come to class becomes very time consuming. I have to spend time on the other courses."

"Difficult to get time to read the material posted because of excessive workloads."

Consequently, many students (56%) experienced feelings of being inundated with what they considered to be content overload:

"Abundance of material and little time to read and become prepared."

"Too much material to read or videos to look at before coming to class."

"Too many things to read before coming to class."

External challenges were caused by the unavailability or unreliability of the necessary infrastructure to fulfil course requirements. Depending on where they lived, and the demands of

their personal circumstances, students were sometimes unable to access Blackboard when they were off campus, and so were not always able to complete the reading and preparation of materials and resources. Consequently, some students characterized their experience with the flipped classroom strategy as challenging because Internet accessibility was problematic:

"Accessing the material from home. No internet access where I live."

"Unable to get onto blackboard. Slow internet connections."

"Problems in terms of accessing the material. Speed of the internet connection in my area."

"No internet in my area."

Discussion

What, then, are first-year university students' perceptions of and experiences with the use of the flipped classroom as a strategy for enhancing learning? Was the strategy, in this particular instance, an instructional success or failure? The reported perceptions and experiences of this group of students, in the same cohort, and on one campus, will be analysed and discussed in more detail as we apply the theoretical positions examined earlier to explicate the findings and connect to existing research. The discussion of students' perceptions and experiences will be structured under three main headings: pedagogical factors, sociological factors, and psychological factors.

Pedagogical Factors

Students (69%) acknowledged that the change in the traditional pedagogical approach of classroom lectures provided them with an opportunity to gain advance knowledge of content and transact the ideas and information in course materials and resources at their own pace. They could accomplish this in learning spaces that were informal and non-threatening, since they most likely would have been at home or outside the classroom. Such an environment presented a chance for them to engage with the material, construct preliminary understanding of content, and direct their learning, independent of the course instructor. Such independent efforts at learner autonomy align perfectly with the constructivist principles that underpin the flipped classroom strategy, and students acknowledged that the strategy could benefit their academic, personal, and professional development. This was evident when they highlighted the fact that increased space for classroom discussion promoted greater democracy given that more students could contribute to discussions.

They further acknowledged that the strategy afforded them an opportunity to develop valuable communicative skills, especially since they were in a teacher development programme.

Many of these positive benefits of blended learning have been identified in the literature in flipped classroom research. Studies such as Galway, Corbett, Takaro, Tairyan, and Frank (2014) have reported positive, engaging learning perceptions and experiences by students. Others have claimed increased levels of student achievement and interest (Herreid & Schiller, 2014) in an environment that promoted active and collaborative learning; and favourable perceptions of the approach due to mediated contact with course material prior to classes, benchmark and formative assessments, and interactive class activities (Missildine, Fountain, Summers, & Gosselin, 2013). Interestingly, these writers also reported improved exam scores when compared with traditional lecture, and lecture and lecture capture back-up. Learner independence is also considered a positive benefit. Students' responses (69%) in our study therefore identified some positive benefits, though such views were neither unanimous nor extensive.

One-third (33%) of participants expressed reservations about the adequacy and competence of their peers to be reliable sources of knowledge, and the ability of their colleagues to function effectively as instructors from whom they could learn. Some openly expressed a preference for lectures by instructors and stated that they learned better that way. This position conflicts with the constructivist principles underpinning the flipped classroom strategy. The tension between the desired learning outcomes of the strategy and these stated positions of students is further highlighted by the complaint of many that they needed prior knowledge to meaningfully engage with the materials and resources posted on Blackboard for their use. An analysis of the rate of access showed that approximately two-thirds of the course population accessed the materials provided. This meant that a significant number (33%) did not bother to peruse the information on which meaningful classroom participation depended. The reasons for the non-access could be related to either access to the Internet or the heavy workload reported in students' responses.

Preference for greater teacher-directed learning can be explained by students' past experiences in authoritarian classrooms. Students perhaps still hold a conception of teaching as transmission of information, and teachers as the repository of knowledge to be passed on to students. This understanding of teaching can be linked to Freire's (1970) banking concept of education. The plantation pedagogy (Bristol, 2012), typical of classrooms in primary and secondary schools, ill-equip students for flipped roles at tertiary level. Thus, having been taught in

an education system characterized by a teacher-centred model of teaching, students find it difficult to accommodate a pedagogical model that is significantly different from the one in which they were instructed.

Psychological Factors

The high level of fear and anxiety that the flipped classroom strategy aroused in students can also be attributed to the experiences of students in the kind of authoritarian, teacher-centred classrooms that were typical of the education system during the post-colonial period in which these students were educated. If students had a history of independent learning, and were accustomed to initiating and sustaining discussions in the classrooms in which they were schooled, the prospect of learning independently and leading class discussions at a tertiary level would not have filled them with as much trepidation as many of them reportedly experienced. Diverse sources of fear and anxiety affected students' self-efficacy (Bandura, 1995). This included fear that they would fail to successfully assume the role of instructor; accurately "transfer" information; effectively hold the floor; and correctly answer questions from their peers or the instructor. In addition to these positions, many participants in the study expressed the view that the prospect of being critiqued by peers was unnerving and affected their performance in classroom activities. Apprehension and nervousness also affected their ability to remember relevant information. While a few students (24%) were willing to embrace the challenge of flipping the classroom, most (76%) found the responsibility of directing their own learning and facilitating the learning of their peers to be a challenging process. The level of independence and agency demanded by the strategy assumed personal characteristics that students did not think they possessed, and thus low levels of self-efficacy affected their beliefs that they and their peers could successfully accomplish the required tasks.

Sociological Factors

Some responses reflected students' appreciation of learning as a social activity, despite the convenience of viewing materials and using resources outside of the classroom. Students were accustomed to achieving much of their learning in a school community as opposed to individual experiences at home. There are benefits to learning in both environments. In a discussion-rich classroom, students can interact with each other and learn from one another, and not just from the instructor. Much learning can take place in a community of learners if suitable constructivist,

student-centred methods are employed. The contradiction arises, though, when students are asked to take leading roles in instruction to achieve targeted learning outcomes. The informal, discursive space that the flipped classroom strategy allows must still be structured for learning over a period of time. Discussions take place in environments with different levels of formality. However, the nature and content of the discussion are expected to contribute to the achievement of curriculum goals and objectives. Students would need to objectively assess the quality of the discussion and the contribution of their peers if they are to have more confidence in the strategy and the teaching-learning process.

There were also other considerations. Economic and social factors determine the level of access that students have to technology. This digital divide affected their attitude to the flipped classroom strategy. Some students lacked the resources at home to allow full participation in required educational activities. Additionally, environmental issues affected connectivity to the Internet, especially in rural areas, and, ultimately, this limited the extent to which some of the students could successfully accomplish learning tasks.

Conclusion, Implications, and Recommendations

The potential and possibilities of inverted, blended approaches that aim to increase students' engagement and learning is undeniable. The flipped classroom model is one such approach. The delivery of content and material outside of the confines of the classroom allows more time to engage in collaborative discussions in class in order to clarify and deepen understanding of concepts, resolve issues, and develop skills. However, findings of this study highlight the importance of psychological and social factors in the process of curriculum change, and the need for ongoing programme evaluation that includes and responds to feedback from students. In this specific instance, the course instructors would need to reassess the curriculum and identify how the course can be modified to achieve the targeted learning outcomes given the issues raised by students. A critical concern is the ways in which adjustments can be made so that students are supported in the teaching-learning process. For example, the length and the amount of materials can be reviewed to address students' feelings of being overwhelmed. Other courses that use blended approaches can conduct similar studies to determine whether students' perspectives and experiences are similar across courses in the same institution.

This study found fairly strong resistance to features crucial to the flipped classroom model. It is not surprising that students who are new to an instructional method would initially resist changes in relation to roles and experiences. The flipped classroom strategy asks students to assume more responsibility for their learning, to first explore subject matter at home rather than in the classroom, and to assume the role of knowledgeable experts and lead classroom discussions. Additional time is required to read and plan presentations, and students have to do this on a weekly basis. Some researchers such as Enfield (2013) and Herreid and Schiller (2013) recommend online or class quizzes to ensure that required reading is done before focused class discussion. However, instructors would have to ensure that additional requirements do not further overwhelm students.

While students in some studies, such as Enfield (2013), reported increased self-efficacy in their ability to learn independently, the majority of students in this study did not hold this position. Weak self-efficacy results in a focus on personal failings and negative outcomes. In a teacher education programme, prospective teachers can be scaffolded so that they develop a stronger sense of self-efficacy through mastery experiences. Teacher educators might be able to accomplish this if they gradually relinquish control of classrooms in higher education and play a more supportive role in assisting students to construct their knowledge. This makes it more probable that teachers would adopt more constructivist approaches at the primary and secondary levels of the education system when they graduate from university and are expected to facilitate the learning of students at these levels.

With respect to this study, an important consideration is the fact that the participants were in the first year of a teacher education degree programme. It is possible that attitudes to independent learning, as required in the flipped classroom strategy, are developed as students progress to their second, third, and fourth year of studies. In fact, researchers who prefer andragogical frameworks in higher education (Blondy, 2007) consider the assumptions of self-directedness, experience, problem-centred learning, and other principles of andragogy advocated by Malcolm Knowles to be useful tools to understand and explain phenomena in adult learning environments. Further research can therefore study this issue from other perspectives, both regionally and internationally. Also, although this was not a focus of this study, the contribution of the flipped classroom to make learning more accessible and inclusive for learners with disabilities is another important consideration. Materials and resources would certainly need to accommodate learners who are deaf and/or blind, and those with other special needs.

The traditional order is reversed when classrooms are flipped. It is important, then, that a decision to implement a new strategy must carefully consider students' previous experiences and circumstances, and their beliefs about teaching and learning. Analysis of students' prior experiences and their needs would help educators to design supportive learning environments, anticipate challenges, and promote successful learning. Courses that incorporate continuous development of skills necessary for students to meaningfully engage in course activities would be beneficial when curriculum changes are introduced. In this case, these would include skills in presentation, discussion, and information technology. It is also important for educators to attend to the affective factors that might influence the achievement of successful learning outcomes. This requires educators to become aware of students' needs very early in a course or programme so that relevant and necessary adjustments can be made.

This paper reported on a small, qualitative study with a limited focus on first-year students enrolled in a course at one campus of a university. It sought to fill a knowledge gap in research on blended learning in an institution of higher learning in the Caribbean. We make no claim that the findings can be generalized to all other courses and campuses. However, new courses are continually introduced, and existing ones revised in light of new technologies and theories. Similar research can therefore be conducted in other university courses with participants from other year groups to compare responses of a wider cross section of students. In this respect, curriculum changes would be data-driven. Indeed, a larger, multi-site study would provide further insights, which would assist university programmes in ensuring that the objectives and aims of courses are attained in ways that place students at the centre of the teaching-learning process. We see this as a critical factor, especially in a teacher education programme, since the experiences of prospective teachers influence their classroom practice. It is also our hope that the study would inspire further evidence-based research and practice to inform the implementation of technology-based instructional strategies that seek to enhance student learning.

References

Ash, K. (2012, August 29). Educators evaluate 'flipped classrooms'. *Education Week*, *32*(2), s6–s8. Retrieved from http://www.edweek.org/ew/articles/2012/08/29/02el-flipped.h32.html

Bandura, A. (1994). Self-efficacy. In R. J. Corsini (Ed.), *Encyclopedia of psychology* (2nd ed.; Vol. 3, pp. 368–369). New York, NY: Wiley.

Bandura, A. (Ed.). (1995). *Self-efficacy in changing societies*. New York, NY: Cambridge University Press.

Bergmann, J., & Sams, A. (2012*). Flip your classroom: Reach every student in every class every day*. Washington, DC: International Society for Technology in Education.

Blondy, L. C. (2007). Evaluation and application of andragogical assumptions to the adult online learning environment. *Journal of Interactive Online Learning*, *6*(2), 116–130. Retrieved from www.ncolr.org/jiol

Bogdan, R. C., & Biklen, S. K. (1998). *Qualitative research for education: An introduction to theory and methods* (3rd ed.). Boston, MA: Allyn & Bacon.

Bristol, L. (2012). *Plantation pedagogy: A postcolonial and global perspective*. New York, NY: Peter Lang Publishing.

Cohen, L., Manion, L., & Morrison, K. (2008). *Research methods in education* (6th ed.). New York, NY RoutledgeFalmer.

Creswell, J. W. (2008). *Educational research: Planning, conducting, and evaluating quantitative and qualitative research*. Upper Saddle River, NJ: Merrill Prentice Hall.

EDUCAUSE. (2012). *7 things you should know about flipped classrooms*. Washington, DC: EDUCAUSE Learning Initiative. Retrieved from https://net.educause.edu/ir/library/pdf/eli7081.pdf

Enfield, J. (2013). Looking at the impact of the flipped classroom model of instruction on undergraduate multimedia students at CSUN. *TechTrends, 57*(6), 14–27. doi:10.1007/s11528-013-0698-1

Freire, P. (1970). *Pedagogy of the oppressed*. New York, NY: Herder and Herder.

Galway, L. P., Corbett, K. K., Takaro, T. K., Tairyan, K., & Frank, E. (2014). A novel integration of online and flipped classroom instructional models in public health higher education. *BMC Medical Education*, *14*(181) doi:10.1186/1472-6920-14-181 Retrieved from http://www.biomedcentral.com/1472-6920/14/181

Gensburg, R., & Herman, B. (2009). An analysis of the theory of constructivism as it relates to pre-service and in-service teachers and technology. In C. Sears, G. Hinck, & C Florez (Eds.), *Theories of educational technology* [Wikibook]. Boise, ID: Boise State University. Retrieved from https://sites.google.com/a/boisestate.edu/edtechtheories/emerging-theories-and-online-learning-environments-for-adults-1

Glesne, C. (1998). *Becoming qualitative researchers: An introduction* (2nd ed.). White Plains, NY: Longman.

Herreid, C. F., & Schiller, N. A. (2013). Case studies and the flipped classroom. *Journal of College Science Teaching*, *42*(5), 62–66.

Layne, A., Jules, V., Kutnick, P., & Layne, B. C. (2008). Academic achievement, pupil participation and integration of group work skills in secondary school classrooms in Trinidad and Barbados. *International Journal of Educational Development*, *28*(2), 176–194.

Lincoln, Y. S., & Guba, E. G. (1985). *Naturalistic inquiry.* Beverly Hills, CA: Sage.

Manjinder. (2012, October 17). Before we flip classrooms, let's rethink what we're flipping to [Blog post]. Retrieved from http://techedblog.tumblr.com/post/34356480070/before-we-flip-classrooms-lets-rethink-what-were

Miles, M. B., & Huberman, A. M. (1994). *Qualitative data analysis: An expanded source book* (2nd ed.). Thousand Oaks, CA: Sage.

Missildine, K., Fountain, R., Summers, L., & Gosselin, K. (2013). Flipping the classroom to improve student performance and satisfaction. *Journal of Nursing Education*, *52*(10), 597–599. doi:10.3928/01484834-20130919-03

Morgan, H. (2014). Focus on technology: Flip your classroom to increase academic achievement. *Childhood Education*, *90*(3), 239–241. doi:10.1080/00094056.2014.912076

Pajares, F. (2002). *Overview of social cognitive theory and of self-efficacy*. Retrieved from http://www.emory.edu/EDUCATION/mfp/eff.html

Pajares, M. F. (1992). Teachers' beliefs and educational research: Cleaning up the messy construct. *Review of Educational Research*. *62*(3), 307–332. doi:10.3102/00346543062003307

Ritchie, J., Spencer, L., & O'Connor, W. (2003). Carrying out qualitative analysis. In J. Ritchie & J. Lewis (Eds.), *Qualitative research practice: A guide for social science students and researchers* (pp. 199–262). London: Sage.

Robson, C. (2002). *Real world research* (2nd ed.). Oxford, UK: Blackwell.

Savery, J. R., & Duffy, T. M. (1995). Problem-based learning: An instructional model and its constructivist framework*. Educational Technology, 35*(1), 31–38. Retrieved from http://www.ouwb.ohiou.edu/this_is_ouwb/papers/savery-duffy.pdf

Strayer, J. F. (2012). How learning in an inverted classroom influences cooperation, innovation and task orientation. *Learning Environments Research*, *15*, 171–193. doi:10.1007/s10984-012-9108-4

Tucker, C. (2012, April 30). Flipped classroom: Beyond the videos [Blog post]. Retrieved from http://catlintucker.com/2012/04/flipped-classroom-beyond-the-videos/

Vaughan, M. (2014). Flipping the learning: An investigation into the use of the flipped classroom model in an introductory teaching course. *Education Research and Perspectives*, *41*, 25–41.

Wellington, J. (2000). *Educational research: Contemporary issues and practical approaches*. London, UK: Continuum Books.

Wellington, J., & Szczerbinski, M. (2007). *Research methods for the social sciences.* London, UK: Continuum.