The Feasibility of Flipping: An Exploratory Analysis of the Flipped Classroom in a Developing Country

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Abstract

There has been an increased demand on educational institutions to provide students with value for money. The sociology course SOCI3035 Caribbean Social Problems with 111 students was transformed to a fully flipped course replacing several face-to-face lectures, tutorials and assessment with online versions as homework. Face to face lecture time featured small group discussions on content posted online. The need for exploration of student perspectives on the flipped classroom were important given the unique context in which it was implemented. That the University of the West Indies Cave Hill is located in a small island developing state, that its Blended Learning Policy had only been recently approved, Barbadian students had to begin paying tuition fees and the new GPA instituted a year prior presented a critical juncture for the introduction of new methods. Significantly more students indicated they would take another flipped class and their participation in F2F discussion in large classes increased using the flipped approach. Students also felt the breakout discussions of the flipped approach compensated for the large tutorial groups whose registration had moved from 20-25 students to approximately 40 students. It was found that the approach contributed to enhanced learning for the students.

Keywords: Flipped classroom, developing countries, sociology, student performance.

The use of technology and online teaching tools alone are insufficient to improve student learning. Rather, it has been argued that engagement is essential for student learning (O'Flaherty & Phillips, 2015). Blended learning and by extension flipping the classroom not only represent alternatives to the traditional classroom but also to fully online programmes. Crews and Butterfield (2014) posit that some courses, student audiences and programmes of study are not compatible with fully online programmes. The inverted or flipped classroom as a pedagogical method allows the use of class time to focus on knowledge application and allows any misunderstandings and errors in thinking by students to be clarified by the lecturer at that point (O'Flaherty & Phillips, 2015).

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While it cannot be considered as new (Herreid & Schiller, 2013), the flipped classroom can be described as "an educational technique that consists of two parts: interactive group learning activities inside the classroom, and direct computer-based individual instruction outside the classroom" (Bishop & Verleger, 2013) that utilises videos as an outside activity of the classroom. It has been found by Cohen et al. (1981) that video lectures slightly outperform face-to-face (F2F) lectures. This is not to say that having a flipped classroom negates the F2F lecture completely, as it has been pointed out by Gilboy, Heinerichs, and Pazzaglia (2015), the direct instruction method is critical when students are tabula rasa. It has also been cautioned that assigning reading outside of class time and in-class discussions based on the readings are insufficient in considering a class to be flipped. This conceptualisation is too broad and affects the evaluation of the efficacy of the approach and there is possibly a failure of students to complete the assigned readings (Bishop & Verleger, 2013).

Institutional Context

The fifty-three year old University of the West Indies (UWI) Cave Hill Campus is located in the small island developing state of Barbados. Teaching of Sociology courses involves two lecture hours and one hour of tutorial. Traditionally, the Sociology lecture is instructor led and the tutorial involves more student discussion and student-led activity. A Moodle platform called eLearning is used to facilitate blended learning at the Campus and this has several components that can be used for instruction and assessment. Of import to the UWI is the point made by O'Flaherty and Phillips (2015) that the flipped approach offers "a means of delivering cost-effective, student centred curricula … in institutional structures that favour faculty research over student learning" (p. 86). Once the initial preparations are made for the flip, there is more time for the lecturer to work with students individually (Blair Maharaj, & Primus, 2015) or even dedicate the extra time to research. The course that forms the case for this research SOCI3035 – Caribbean Social Problems is an undergraduate, Level II/III course generally taken in final year by Sociology majors. In the survey conducted for this research when students were asked about their awareness of the flipped classroom approach before taking the flipped SOCI3035, 70.6% responded in the negative. Of the 29.4% who answered yes, 0.04% or 1 student indicated they knew it from at work. Twenty-one others (99.96%) were aware of the approach from taking a course where the method was piloted by this author during Semester II of Academic Year 2014/2015.

The application of the flipped approach has generally been used with science, technology, engineering and mathematics (STEM) courses. After a careful review of the literature one has to concur with Forsey Low, and Glance's (2013) position that there is still limited research into flipping of the sociology classroom. Recent research on flipping has utilised an Arts class, more specifically a History of Landscape Architecture as its subjects (Newman, Kim, Lee, Brown, & Huston, 2016).

Facets of Feasibility

There are several factors that can be considered when assessing the feasibility of the flipped classroom at the UWI Cave Hill. These include but are not limited to resources (physical, human, financial), technological environment, acceptance of the method by students and time required for its implementation. Two major features related to the technological environment explicitly facilitate the introduction of the flipped approach into Sociology classes. These are the University's policy on blended learning and the technological infrastructure available. Technological lag in developing countries could exclude Universities in such contexts from pursuing some delivery methods. Internet access and use is associated with wealthier emerging and developing nations, young adults, the higher educated and English speakers more likely to access the Internet (Pew Research Centre).

A Policy on Blended Learning

The approval of the blended learning policy at UWI Cave Hill by Academic Board on October 9th, 2014 was crucial to the successful implementation of a flipped approach as it formally established blended learning as an appropriate model for instruction at the Campus. This meant that faculty could legitimately proceed without fear of obstruction from 'traditionalists'. It represents a dramatic shift in the pedagogy at the UWI Cave Hill as there is still a dominance of F2F instruction. The implementation of the flipped class in SOCI3035 came some 11 months after its approval. One potential challenge in using the flipped approach relates to the timetabling at UWI and the calculation of contact hours. The pre-recorded lectures and online assessment used in the flipped classroom while allowing for more interaction and discussion during F2F contact meant that the present requirement of 2 lecture hours and tutorial sessions based on total course enrollment was a potential restriction. Flipping the classroom also meant a transformation in one's role as the lecturer from only standing at the lectern and speaking to going around to the various discussions or breakout groups. As Gilboy et al. (2015) would describe it, one functioned as both "sage on the stage and guide on the side".

Internet Penetration

The Internet can significantly impact the quality of the blended course delivery whether it is simply a case of access or the speed and quality of connection. The flip also came at a time when nationally the technology and infrastructure were in place to facilitate online teaching and learning. Examination of Table 1 shows that the prevalence of Internet use in Barbados is substantially greater than it was 16 years ago.

Table 2 shows Internet subscriptions and category of Internet access of the population of the island. This is important, for as mentioned before Barbados is a small island developing state and its Internet penetration rate at 76.11% is substantially higher than the global average for developing countries of 35.3% and that of the Americas (66%) (International Telecommunications Union, 20165). The islands of Jamaica and Trinidad where the Mona and St. Augustine sister campuses are located have internet penetration rates of 42.2%

Table 1: Internet Use in Barbados 2000 – 2014.

	YEAR			
	2000	**2005**	**2010**	**2014**
Internet Users in Barbados per 100	4.0	52.5	65.1	76.7

Source: World Bank World Development Indicators

Table 2: ICT Statistics for Barbados Ending December 2015.

ICT Statistics for Barbados Ending December 2015 (population)

Type of Internet Connection	2015	2014	2013	2012	2011	2010	2009	2008	2007
Mobile Internet subscribers	172,716	305,456	191,823	246,296	213,345	211,123	196,533	254,951	240,115
Fixed Internet subscribers (dial-up)		77,158	628	885	1,258	1,213	1,852	12,795	19,084
Broadband Internet subscribers	66,969	23,999	67,798	66,884	60,643	56,190	51,263	49,216	47,133
DSL subscribers		52,730	57,121	57,592	58,538	53,441	50,486	41,012	28,029
International Internet Bandwidth (Gb/s)	54,148	80,750	11,110	8,275	7,505	4,605	3,540		

Source: Barbados Telecoms Unit[2]

and 69.2% respectively (ITU, 2016). The UWI Open Campus delivers fully online courses.

A brief survey administered at the start of the course to determine the Internet access of students found all students having access in various ways. In addition to having the Moodle platform administered as eLearning, the Campus also has open WiFi and, computer labs accessible by all students. In the same survey administered at the start of the course the students' greatest fear or reservation with the use of online technology in the course was not having internet access at a critical moment. When all of these factors are considered along with the licensed software and technical support available to lecturers on the Campus the flipped classroom becomes a feasible option.

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[2] ICT Statistics for Barbados Ending December 2015
http://www.telecoms.gov.bb/website/index.php?option=com_content&view=article&id=25&Itemid=127
accessed 2016-06-27

Another Factor: Time

When the course that forms the subject of this research was flipped it required the addition of other video lectures, online discussions, online quizzes and other online activities. The move to this transformative use of technology involved remodeling the course significantly. Prior to this move, the use of technology in the course SOCI3035 in 2013 was in line with enhanced use of technology as the eLearning platform was used to disseminate course materials and communicate with students. While there was one video lecture that replaced a F2F lecture and an accompanying online discussion, the use of technology did not result in any significant reduction in F2F instruction. The flipped classroom saw approximately 65% of course activity move online. Flipping was more time consuming in the preparation of narrated PowerPoint video lectures, creation of online question banks, and the assessment of online discussions. It must be stated that the time ordinarily spent in F2F tutorials was then spent moderating and/or grading online discussions.

A flipped classroom can be implemented in several ways. In acknowledging that flipping involves much more than the insertion of video lectures into course content. Students should have enough time to read material and make any notes prior to the class. The SOCI3035 flip consisted of 3 video lectures out of 10 total lectures; 3 online discussions; 2 online quizzes. Online assessment represented 30% of the coursework grade or 15% of the total mark.

Method of Flipping in SOCI3035

1. The pedagogical approach was explained to students in the first lecture and as mentioned before a brief online survey was used to determine Internet access before lectures commenced. It should be mentioned that students in the course also used an online feedback tool to obtain student input into the selection of topics to be covered in the course. This possibly primed them for the extended use of eLearning in the course, the feedback tool and garnered a sense of investment or control in the course, aiding in engagement.
2. Readings or links to readings were posted on eLearning no less than a week before class. The references to these were as identified in the course syllabus.
3. Being a blended course, classes were either F2F or online.

   F2F Class Organisation – In the event of a F2F lecture, the first hour of the lecture was spent in break out discussions. These peer-to-peer breakout groups consisting of 4-5 students facilitated group based interactive learning activities inside the classroom. They engaged in discussions guided by three questions on the scheduled topic. The questions were issued at the start of the class and were aimed at explanation and where possible application of information. Given that the knowledge acquisition should have preceded the class via watching assigned videos and reading assigned literature. The flip allows students to process information at lower taxonomic levels (knowledge acquisition) prior to class. The lecturer passed around (circulated among groups) in the first hour of the 2 hour lecture session to each group to hear the discussions on the questions and corrected

any misunderstandings as they arose. This was bolstered by coursework questions that targeted application, analysis and evaluation. A 20 - 30 minute 'lecture' was given that ensured any muddy points were clarified and any key points that should have been taken away were made.

Online Class Organisation – Readings for online lectures were similarly posted a week before the lecture appeared on eLearning. Topics covered in narrated PowerPoint (video lectures) did not have a repeated lecture component delivered F2F. Online discussions replaced F2F tutorials that would have either covered topics covered in F2F or online lectures. On these occasions like those of F2F lectures, students were not required to physically have to attend class for tutorial that week. Online discussions remained open for one week.

Online discussions based on the video lecture followed a similar format to when only readings were provided where students would have to address three questions. Given the size of the class, students were enrolled into separate groups not visible to each other for the discussion. As student discussions progressed each group would be moderated to ascertain their progress with the problem, and determine any aspects of the topic that were giving them trouble. At this point any helpful comments were provided or further stimulating questions about their responses were asked to obtain greater clarity about the post(s). Unclear areas were noted to clarify within that group and share the clarification with the general class.

Rationale of Study

In its Budgetary Statement of August 13th, 2013 the Government of Barbados announced that from academic year 2014/2015 it would no longer pay the tuition fees of Barbadian students[3]. Since the implementation of the policy there has been a dramatic decline in enrollment, especially mature students. This has led to an adjustment to the scheduling of classes. The SOCI3035 course had an enrollment of 174 students in Academic Year 2013/2014. The average size of SOCI3035 after the introduction of the policy was 110 – 115 students. The average size for a tutorial in the past was 15-20 students with some tutorials on occasion having 25-30 students. The adjustments in academic year 2015/2016 have seen tutorial sizes increase to 40 students and upwards. The consequence of this tuition policy is that while there was a decline in the demand on the institution vis-à-vis student enrollment ratios, there was an increased demand by students for value for money.

Student evaluations of my sociology courses generally indicated that students were finding the reading list difficult to manage. In conversations with colleagues they often expressed concern about a lack of reading on the part of students. Based on personal experience in the classroom one felt as though while students were physically present and much time was spent on explaining material and soliciting interaction by asking questions that a connection was still not being made with them or they with the lecturer or the course material. So that while the student evaluations for SOCI3035 for Academic Year 2014/2015

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[3] Government of Barbados. Annual Budgetary Statement 2013
http://www.nationnews.com/nationnews/news/51146/text-2013-budget accessed 2016-06-27

the students indicated that they believed the lecturer tried to encourage participation this was not felt.

More specific to this research, is the potential impact of the reduction in the number of tutorials offered, and a concomitant increase in the enrollment in each tutorial could decrease the level of interaction among students and the lecturer. For while efforts were made in the lecture to encourage student participation, smaller voices could easily be lost. The increased student to lecturer ratio also translates to a reduced potential to spot the struggling student. However, it is possible that students may find the flipped approach one that allows for greater knowledge transfer and interaction in the absence of the usual tutorial discussions. Furthermore, students may find the utilisation of a flipped approach in a three-hour lecture session a more productive and beneficial use of time than the present use of time given the combination of tutorials and lecture. Technological resources aside, while the main question in this research is, "is flipping the classroom feasible for teaching large Caribbean sociology classes?", there are several attendant questions. These questions ask: Is there demand for the method by students? Is there acceptance of the method by students? What aspects of the approach do they like? Does flipping the classroom adversely affect the academic performance of SOCI3035 students?

This research aids in determining the impact that a flipped classroom approach can have on university level student engagement in large class contexts. Additionally, it would provide some insight into the efficacy of the model given the transition that the classes are undergoing. Most efforts at flipping classrooms are concentrated at primary and secondary level education institutions. Questions have been raised about the applicability to and efficacy of the flipped approach with large class sizes. Blair et al. (2015) in contending that most research on the flipped classroom focused on student experience and not the enhancement of examination outcomes investigated whether the flipped classroom improved the learning experience of students in relation to exam performance and student perception. The research conducted between two cohorts of undergraduate engineering students in the same course at the UWI St. Augustine Campus in analysing the student evaluations and pass rates before and after the flip found no significant impact on performance as a result of the flip (Blair et al., 2015). Furthermore, it was found that there was a decline in attendance of F2F classes with the introduction of the flip but there was an improvement in student perception of the engineering course MENG3015 – Material Technology (Blair et al, 2015). In assessing the student opinions of the flipped classroom learning environment Gilboy et al. (2015) utilised anonymous surveys that were distributed in class or online with a response rate of 72%. Students' appreciation of the flipped approach for greater control over their learning experience was clear as it has been found that they liked the ability to work at their own pace and time (Gilboy et al, 2015). Experience of other researchers using the flipped classroom in a large class found an increased level of interaction between the lecturer and students (Neuman et al, 2016).

In contrast Herreid and Schiller (2013) posited that there was less satisfaction of students of the flipped classroom structure initially. Therefore, a potential challenge in using the flipped approach is that students may be apprehensive. Berrett (2012) has suggested that students may not be fond of flipping as they had to take greater responsibility over the

learning process and not simply write notes provided by lecturers. That is, it requires greater participation and engagement on their part. This dislike can be reflected in student evaluations as it has been pointed out that student evaluation scores for the same lecturer decline by approximately half when the flipped method is used (Franklin as cited in Berrett, 2012).

While it has been found that when compared, students who spent more time engaged with online activities had better grades than those who did not (Neuman, 2016) there is still a dearth of research on the impact of the flipped class on student performance. In calling for future research it was suggested that the examination of grades from assessments from prior to the use of the flipped approach versus the grades after implementing a flipped approach should be examined for courses (Gilboy et al. 2015). This research aims to fill this gap in the literature. This research adds to the growing body of literature on flipped classrooms for student engagement purposes in large university level classes. This research also attempts to identify the features of the online activity students liked the most as well as their feelings on the breakout discussions.

A critical part of the assessment of the feasibility of flipping is the demand for the method by students and its acceptance by students. Students logically would not wish to know that a method of instruction used by a course lecturer negatively impacts on their performance in the course. Such information can be gleaned from the use of a survey.

Methodology

The course at the centre of this research, SOCI3035 – Caribbean Social Problems had a student enrolment of 113 and 111 in academic years 2014/2015 and 2015/2016 respectively. While it has been said by Berrett (2012) that class size is not a critical factor in seeking to implement a flipped classroom, experience with SOCI3035 and time allocated for class meant that limited time could be spent with some of the small discussion groups. The size of the class also meant that more energy had to be expended in facilitating the discussions and general preparation was greater.

An online survey was conducted at the end of the semester 2015-2016 academic year to obtain the opinions of students in SOCI3035 on the approach. The online questionnaire administered on the eLearning course page comprised of twenty-four (24) questions of which eleven (11) were closed ended questions. A list of the questions is found in Appendix 1. Students were told that the survey served to gather additional information that wouldn't be obtained using student evaluations about their opinion of the method and were given one week to complete the survey. Responses to open-ended questions were assigned functional descriptions based on commonality of the theme and then grouped under that theme. The findings of the survey were analysed in addition to results of the student evaluations of the same cohort and the preceding cohort.

Coursework, examination and final marks were obtained from the Cave Hill Online Gradebook and any cases with missing marks were excluded from the analysis. An independent samples *t*-test was then performed on the marks of students for each of these cat-

egories of marks. The independent samples *t*-test was used as the comparisons were made between two cohorts of the same course and the aim was to determine whether there was a significant difference in the marks of the two groups.

Flipping: Past Experience & Preferences of Students

The online survey had a response rate of 76.6% as eighty-five students of the 111 Caribbean Social Problems students replied. Of these 29.4% ($N = 25$) had an awareness of or experience with the flipped approach. Review of the responses of students who were aware of the flipped classroom approach found that 88% (22) of these students' awareness was due to learning of the method through other courses previously taught by this author in Semester II of Academic Year 2014/2015 when the flipped approach was piloted. Overall 81.2%, of the students felt that given the size of the class that the flipped approach was useful.

When online activities were ranked according to preference, majority of the students preferred the online lectures (42.3%). Online discussions and online quizzes found favour with 11.8% and 11.6% of the students respectively. The second largest group of students preferred having the lecture and reading material posted online before the class (35.3%) with some 88.2% (75 students) indicating they were able to prepare the reading before attending class. Ninety-four percent (94.1%) of students found having reading material available before the lecture useful. Using a z proportion test it was found that a significant proportion of students ($z = 12.47$ $p<0.05$) found that having the reading material available before the lecture useful compared to those who did not. Generally students expressed that they felt more prepared for the lecture and better able to understand the material and topic. This is captured in student responses like "They (the availability of materials before class) made me critically evaluate the social problem being discussed, making me more knowledgeable when it was time for class."

In considering the feedback on completion of reading and its significance means that the flipped approach results in more class preparation by students. The utility of the reading material and lectures being available before the class centred around "pre-knowledge on the topic" or an introduction of the topic to be done in the lecture [F2F class] and then clarification and better understanding from the class. It must be said that in the student evaluation for the flipped class some students indicated that they liked least the amount of reading in the course. It must be recalled that prior to the introduction of the flip students were not pleased with the amount of reading that had to be completed. However, given the nature of flipping it is possible that students perceived an increase in the reading.

Investigating whether the blending of the course impacted on participation in discussions, 38.8% of the students indicated that they would normally participate in the F2F discussions in large classes under the traditional lecture format. The data revealed that the breakout discussions that were utilised as part of the flipped class encouraged participation in class discussion.

"The flipped approach fosters a different type of discussion and allows for more face to face time with the lecturer".   SOCI3035 Student response

"It gives us as students an advantage since there is interaction between the lecturer and students in smaller groups instead of an entire lecture room, this gives everyone a chance to discuss anything they may not understand". SOCI3035 Student response

Seventy-four percent (74.1%) of students thought that the breakout/discussion groups before class encouraged their participation in class discussion versus the 61.2% who normally participated in F2F class. In explaining why they thought the discussions were helpful it is clear that the flip facilitated peer assisted and cooperative learning. Some respondents explicitly stated, "you get to learn from your peers and hear different perspectives", "you became aware of some of the others [students'] thoughts about the topic and … also have your input into the topic". The "views of my [their] fellow classmates were thought provoking and we [they] were able to share our [their] different opinions", allowing them to "share how we [they] understood what we [they] read before class and also correct and learn from each other". Approximately 69.4% of students found the breakout discussion groups helpful as a result of the peer to peer teaching and learning that occurred, the greater awareness of other perspectives from peers and more in-depth understanding as these discussions were said to encourage critical thinking. One respondent specifically stated that "the break out session was very helpful for me, I had to read to participate, which will help me for the final exams and I heard the views of my colleagues". Of the breakout discussions another respondent indicated that "sharing of ideas helped to further analyse the concepts learnt. We [They] also got to clarify misconceptions."

Given that the breakout discussions were key to the flip, the positive responses from the survey are encouraging. If pressed a little further it was found that some students preferred the flip as the small groups facilitated their participation for several reasons. For instance one student wrote of "A fear of speaking in front of large groups. The fear of being wrong or judged by the rest of the class. [They] Always had questions but was blocked by the fear of asking in front of a large group". Several others expressed similar sentiments. Some also indicated that large classes felt uncomfortable, didn't facilitate learning, do not give individuals a chance to talk and felt the large tutorials were "too big to generate appropriate discussions needed for such a heavy course load". The breakout discussions were also thought to prompt students to read. A latent effect of the breakout discussions identified by some of the students was the opportunity to meet and speak with new people, building of relationships and beginning of discussions that persisted beyond the in-class discussion. One student remarked "it brought a better sense of unity within the course and … formed bonds of friendship that ordinarily would not be formed based on normal circumstances."

Evident in Table 3 below, the discussions facilitated by the flip did more to encourage student participation, with the online discussions having more favourable responses than the other two formats for discussion. On the question of given the size of the class wheth-

er the flipped classroom method was useful in encouraging participation and delivering material 81.2% of the students indicated yes. Did the flipped classroom frustrate students sufficiently to deter them from taking another flipped class? Fortunately for this research-er 76.5% of students indicated they would enroll in another course using a flipped ap-proach.

As mentioned before, discussions mainly occurred in tutorials in the traditional format of the class although class participation was solicited in the lecture. When asked about the impacts on their participation in F2F classes since the changes to enrolment, several stu-dents stated that it was "too big a class", "tutorials were simply too large", "the large number [in the class] and the room the tutorial was in … was too small for the amount of people", "the time was too short" due to the number of students.

Table 3: Discussion Participation Comparison.

	Discussion Format		
	Traditional Class	Breakout Group	Online
YES	38.8%	74.1%	88.2%
NO	61.2%	25.9%	11.8%
TOTAL	100%	100%	100%

Further exploration on the ability of the breakout discussion groups used in the flip to compensate for the large tutorial groups saw majority of the students believing that it did. One explicitly stated that "it allowed the lecturer to get her message across while at the same time using students to do so, all that was left for her to do was to clarify or elabo-rate." Not all feedback was positive as four respondents indicated that they thought the discussions were annoying, noisy and unstructured and confusing. Although the flip was clearly explained in the first lecture this may point to a lack of understanding of the mod-el or a fear of the unknown. An investigation of this is beyond the scope of this paper and presents an area for future research.

The more important points here are for those who were coded as responding negatively and ambiguously. Among the responses some indicated that "everything felt like a lec-ture", "group members were a bit far from each other and you could not hear what was said" and "time goes fast". These three points raise some important issues. That every-thing felt like a lecture may mean that learning was occurring and the time passing quick-ly may mean that students were so engrossed in the activities that they lost track of time. The layout of the lecture theatre may not have been conducive to free movement and breakout discussions. Some students lamented the lack of preparation by group members impeding the discussions and a fear that as the discussion was not led "by someone who could answer questions when confused". The survey also revealed that some students

were not clear on the structure of the flipped class as the lecture seemed rushed while others perceived that it was a method for the lecturer to determine whether they were reading and what they knew. This meant that although some students had difficulty related to the method as one for instruction that it was serving as a good substitute for the traditional lecture.

Five functional categories were identified in student explanations of their enjoyment of the online activities. These were (i) accessibility/flexibility/convenience, (ii) Additional opportunities for discussion and assessment, (iii) more time for in depth exploration of topics (critical thinking (iv) feedback/peer-to-peer learning and (v) enhanced learning. These data were extensive and necessitate in depth exploration of student attitudes to online activities. This too is beyond the scope of this article, which explores whether the flipped approach is practical and acceptable for teaching sociology.

Data gathered in student evaluations changed between the academic years 2014/2015 and 2015/2016 as the questions changed. However, when the evaluation from the flipped class was reviewed it was found that in the category of learning activities with the lecturer that on a scale of 1-5 with 1 being strongly disagree and 5 being strongly agree the average was 4.28. The highest rated category was students feeling that the learning activities encouraged them to interact/collaborate with other students (4.41). On the other hand, the variety of activity and level of interest and stimulation equally averaged 4.36. An average of 4.25 was recorded for students who thought the learning activities helped them develop the knowledge, attitudes and skills specified in the course learning outcomes. Even though the traditional mode of delivery was not used, students still rated the course design favourably with the ease to follow the progression from one course topic to another averaging 4.31. The overall course score for the Lecturer in the flipped classroom was 4.28 compared with the GSSW departmental average of 3.89 and the FSS average of 3.95. The fact that student ratings for the quality of the learning experience averaged 4.45 and all ratings for the course were higher than GSSW and FSS averages lends support to the flipped class approach by students.

Although the structure of student evaluations had changed, the introduction of the flipped classroom did not negatively affect the rating of the course or the lecturer. These results are not completely surprising as student evaluations from classes where the flipped approach was piloted by this author, students expressed support for the method apart from the perception of a heavy reading load, with one indicating that it was too much work.

Class Attendance

Comparison of the student evaluations for the course are rated on a scale of 1-5 with 1 representing no attendance at classes, 2 – less than 25%, 3 – 25% to 50%, 4 – 51% to 75% and 5 – 76% - 100% attendance. It was found that mean student attendance was higher for the flipped class at 5 with 87.5% of the class indicating they attended 76-100% of lectures than in the preceding year when the mean attendance was 4. The survey results similarly found an average attendance of 86.4%. In any event this augurs well not

just for the flipped approach but the class as it is timetabled on Fridays 16:00 – 18:00 or prime unwind time for students.

Course Performance 2014 vs 2015

Figure 1 below compares the final grades for SOCI3035 students in Academic Years 2014/2015 and 2015/2016. It is evident that there was an increase in the percentage of students achieving grades A-, B+, B, B- and a reduction in the percentage of students achieving grades of C+ and C. The percentage of students failing the course moved from 18.7% in 2014 to 7.3% in 2015. There was also an 'improvement' in the quality of failures with a reduction in failures below 45 marks or Grade F2 with only 2 students out of the 8 failures achieved a grade F2.
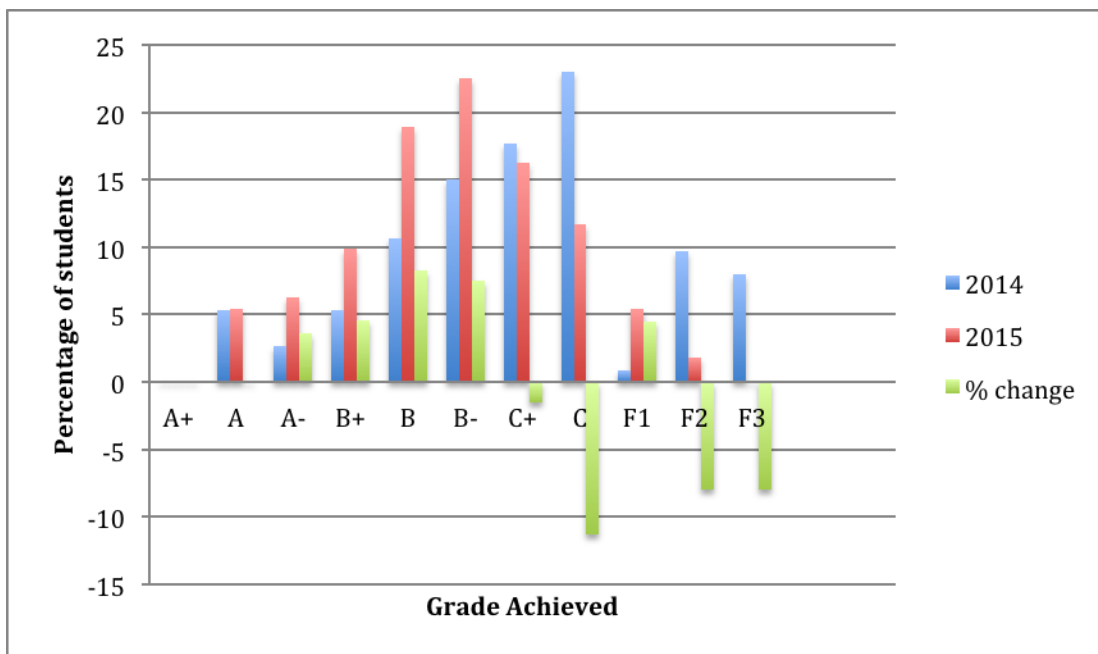
Figure 1 : Comparison of Final Grades of Students 2014 & 2015.

When grades are examined for the various components of the course it is seen that there was an increase in the mean mark achieved for the coursework, exam and by extension the final mark achieved for the course (Table 4). The average performance in the coursework remained stable within a grade B performance (65-69). The stability in coursework mark performance is worthy of note for several reasons. Firstly, the coursework weighting as a percentage of coursework changed from 40% in academic year 2014/2015 to 50% in academic year 2015/2016. Secondly, the coursework composition changed as the course was blended. In 2014 the coursework comprised a written paper worth 25%, a tutorial presentation worth 10% and a discussion mark of 5%. In academic year 2015/2016 the coursework composition and marks changed with a written paper worth 25%, online quizzes worth 10%, online discussions worth 5% and a presentation worth 10%. Given the coursework preparation especially online quizzes that were not complet-

ed under examination conditions students would have potentially had the opportunity to collaborate or even consult material for answers. That the marks remained stable speaks to the integrity of the online assessments. The average performance in the exam changed from a grade C (50-54) to a Grade C+ (55-59) while the overall or final grade performance moved from an average of 57 or grade C+ in 2014 to an average of 61 or grade B- in 2015.

Table 4: *t*-test Results Comparing Performance of Students: Group Statistics.

	Year Group	N	Mean	Std. Deviation	Std. Error Mean
Coursework	2014	111	65.3450	12.12145	1.15052
	2015	111	67.2973	6.16529	.58518
Exam	2014	111	52.6897	16.11943	1.52999
	2015	111	56.7748	17.09901	1.62297
Final	2014	111	56.4865	12.59139	1.19512
	2015	111	61.4685	12.52548	1.18887

When analysed using an independent samples t-test changes in the coursework and exam marks were not found to be significant but a significant improvement occurred in the overall final grade (*t = -2.955, p<0.01*). It may be suggestive that the increased time for critical thinking in class may have led to some improvement in student performance. However, cautions have been made against drawing such conclusions as the improvement in performance observed may be due to the abilities of the cohort.[4]

While the online survey did try to determine the demand for the flip by students, it was found that the question directed at obtaining this information was not as clearly worded as it should have been and this may have presented issues for students. So unfortunately on this point further research will have to be conducted. However, the closest indicator of the acceptance of students of the flipped approach was mentioned earlier and that is their willingness to take a flipped class again which majority of the class indicated.

Conclusion

A conclusion implies an end but there is much more that can be done to advance this research. Much of the contents of this conclusion therefore focus on next steps or further research that has arisen out of this research. However, it can be said to colleagues seeking

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[4] When an earlier version of this paper was presented at The UWI Cave Hill Teaching & Learning Symposium in 2016 Professor Clive Landis raised this as a potential factor influencing the results. This author is grateful for this comment.

ways to engage students, have them complete readings and impact negatively on student performance and perceptions of them and the course, the flipped classroom presents that option. Some developing countries have the capacity to implement a flipped classroom, it may be time consuming initially but with savings in time and electricity etcetera it may prove economical without any adverse effects on the grades of students. However as mentioned this is an area for further research. Future research should also investigate whether students feel the flip meets their needs and whether students perceive a difference in grades when the flip is used. Another concern of this lecturer is whether the flipped approach contributes to positive study habits by students. That is, do students who experience a flipped classroom approach continue to use the study or class preparation skills in classes without the flip?

While this paper examined coursework, exam and overall marks for the course and found a significant difference in overall marks, it is possible that this relationship may not maintain its significance if several cohorts preceding and after the flip are analysed. Future research on the flip in SOCI3035 should analyse at least 4 cohorts preceding the flip and 4 cohorts using the flip to determine whether the relationship observed in this research persists.[5]

Apart from technology, one of the biggest factors that may impact on the feasibility of flipping at the universities is the institutional culture. Institutions where faculty members do not also utilise technology or are apathetic to its use or even question the efficacy of such technologies, foster an environment that works against blended learning. The increased use of technology reduces the students' apprehension of courses utilising such delivery. The flipped classroom and other blended approaches have the ability to help universities mitigate the declines in enrolment as they present other options for students who desire more flexibility in the learning process but still wish to have a F2F connection. Encouraging the use of technology functions two-fold in that while it enhances student engagement it also allows students to gain confidence in using technology in future studies that may be completely online as well as in the workforce.

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[5] This recommendation arose out of the previously mentioned feedback from Professor Clive Landis

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Appendix - Questions from Online Survey

1. Were you aware of the flipped classroom approach to teaching before taking SO-CI3035 Caribbean Social Problems this semester? Yes   No

2. If yes, please state which course.

3. Rank the online activities according to the one preferred most.
   online discussion; online quiz; online lectures; reading materials posted online before the lecture

4. Were you able to read any of the assigned materials online before attending class?
   Yes   No

5. What percentage of materials were you able to prepare before attending class? (0 - 100)

6. Did you find having the reading material available before the lecture useful?
   Yes   No

7. If you answered yes to the preceding question please explain how you found the availability of the reading useful.

8. Do you think that the break out/discussion groups before the lecture were helpful?
   Yes   No

9. Explain why you thought the breakout/discussion groups before the lecture were helpful.

10. What percentage of face to face lectures did you attend? (0 - 100)
    What did you enjoy most about the online activities?

11. Are you a student who normally participates in face to face class discussions in large classes?
    Yes   No

12. Do you think that the breakout/discussion groups before class encourage your participation in class discussion?
    Yes   No

13. Please explain the influence you think the breakout/prelecture discussions had on class interaction.

14. Did you participate in online discussions?
    Yes   No

15. What was your reason for participating in online discussions?

16. Given the size of the lecture (112 students) do you think that the flipped classroom approach was useful?
    Yes   No

17. Why was the flipped approach useful for you as a student in a large lecture?

18. Do you think that the size of your tutorial affected your participation in face to face class discussions?
    Yes   No

19. What do you think impacted most on your participation in face to face tutorial discussions?

20. Do you think that the breakout/group discussions before lectures compensated for the large tutorial groups?

21. Please explain the reasons for your answer.

22. If you had to choose between a three hour lecture using a flipped approach or the current 2 hour lecture with 1 tutorial not using a flipped approach which would you choose?

23. Please explain your reason in the preceding question 20.

24. Would you enroll in another course that used a flipped approach in the future?
    Yes   No