

**UNIVERSITY OF KWAZULU-NATAL**

**THE FLIPPED CLASSROOM APPROACH IN LARGE CLASS SETTINGS AT  
WALTER SISULU UNIVERSITY**

By

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## ***Abstract***

Massification of higher education has resulted in large classes that compel universities to design and implement curricula that address the diverse needs of students. The literature on pedagogies in higher education proclaims that the traditional lecture method is inadequate to deeply engage active student learning in large class settings. This study, motivated by my own experience of teaching Business Information Systems (BIS) to undergraduate students in large classes at the Walter Sisulu University (WSU) sought to investigate the extent to which a flipped classroom approach influenced their learning experiences. Wang *et al.*'s (2015) Complex Adaptive Blended Learning Systems (CABLS) framework and Biggs' (2003) theory of Constructive Alignment provided the lenses to identify and discuss the factors that influenced the students' experiences of learning BIS through the flipped classroom approach as well as to understand its pedagogical underpinnings. Located in an interpretive research paradigm the study employed a mixed methodology approach to produce data. Document analysis of the BIS module templates as well as supporting course documents were analysed with the aim of understanding the pedagogical underpinnings of the flipped classroom approach. A census survey of students who were introduced to the flipped classroom approach was conducted to collect quantitative data through a closed-questions questionnaire. Qualitative data was produced through a focus group discussion with eleven participants who were selected through the snowball sampling approach. Students participated voluntarily. The quantitative data was analysed through descriptive statistics. The qualitative data was analysed through thematic and document analysis. Findings of the quantitative and qualitative analysis for the most part revealed that the flipped classroom approach influenced the majority of students to improve personal and academic skills in ways that were not easily developed during the traditional lecture approach in large class settings. The flipped classroom approach was rated at a lower scale in students' motivation to attend classes and meeting their expectations of the module. The study concluded based on its findings that the flipped classroom approach enables students to operate at all cognitive levels and in-line with the critical cross-field outcomes that are required in the world of work.

**Keywords:** Complex Adaptive Blended Learning Systems, Constructive Alignment, Flipped Classroom Approach, Large Class, Phenomenology

*Declaration*

## COLLEGE OF HUMANITIES

### DECLARATION – PLAGIARISM

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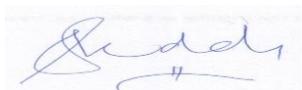
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# Chapter 1

## 1. *Introduction and background to the study*

### 1.1 Chapter Outline

In this chapter the key words as they pertain to the study are defined. This is followed by a presentation of the background, purpose and significance of the study. The research objectives, critical research questions and my role as the researcher follow. A brief overview of the course as it existed prior to this research study is described with the intention of providing a pedagogical context. The chapter concludes with a breakdown of the subsequent chapters.

### 1.2 Definition of key words

The following terms in this dissertation will have the meanings as outlined below:

**Blended learning** – Wang, Han, and Yang (2015, p. 381) define blended learning as “*the integration of technology-mediated learning with campus-based learning*”. Blended learning in this study means the approach to teaching and learning where the Internet is used in conjunction with face-to-face instruction in the classroom.

**Business Information Systems (BIS)** – Hardcastle (2008, p. 8) defines business information system as “*a group of interrelated components that work collectively to carry out input, processing, output, storage and control actions in order to convert data into information products that can be used to support forecasting, planning, control, coordination, decision making and operational activities in an organization*”. BIS in this study is a module that is offered to second year students registered for a National Higher Certificate (NHC) in Accountancy at Walter Sisulu University (WSU).

**Flipped Classroom approach** – is a teaching approach where “*students gain first exposure to new material outside of class, usually via reading or lecture videos, and then use class time to do the harder work of assimilating that knowledge, perhaps through problem-solving, discussion, or debates*” (Brame, 2013, p. 1). Flipped classroom approach in this study adopts the same definition, the only exception is that the videos are available online and students watch them outside the classroom and never in the classroom. In addition, videos are sometimes substituted with readings.

**Formative assessment** – *“Formative assessment is a systematic process to continuously gather evidence about learning. The data are used to identify a student’s current level of learning and to adapt lessons to help the student reach the desired learning goal. In formative assessment, students are active participants with their teachers, sharing learning goals and understanding how their learning is progressing, what next steps they need to take, and how to take them”* (Heritage, 2007, p. 141). In this study formative assessment refers to any form of assessment that is used mainly to evaluate students’ understanding at a given point in time and is meant mainly for developmental purposes. More often, there are no marks attached to it and for this reason, it is regarded as low stakes.

**Massification** – massification is a term that is used to define the rapid increase in student enrolment that was observed towards the end of the twentieth century (Scott, 1995). In this study massification refers to the general increase in student numbers where student numbers exceed the initial planned capacity of classrooms and other resources related to teaching and learning in higher education institutions.

**Summative assessment** – Summative assessment contrasts formative assessment in terms of the purpose for assessment. The results from summative assessments are accumulated and used to determine whether a student has fulfilled the specified learning outcomes and qualified to achieve some kind of accreditation. In most cases the grades received in summative assessments are final and can affect students’ future projections. In summative assessments, therefore, students are less likely to try-out new ideas and concepts (Biggs and Tang, 2007). In this study summative assessment refers to any form of assessment that is used mainly to grade students and to determine whether or not they have passed.

### **1.3 Background and context**

Massification is a global trend (Smit, 2012) that is not projected to end anytime soon (Senekane, 2010). This trend not only applies to higher education but is a dilemma *“for most teaching and learning experiences from primary to tertiary institutions in developing countries”* (Senekane, 2010, p.4). In higher education it results in large classes that compel universities to create and deliver curricula that address the diverse needs of many stakeholders (Oliver, 2008; Chan, 2010); resulting in the growing administrative loads and various assessment tasks that are often too difficult for lecturers to control, especially when there are no teaching assistants or additional support (Jansen, 2003). The lecture method, therefore, is the dominant teaching method in large class settings in most institutions

worldwide (Christopher, 2011; Goh, 2012). It is teacher-centred and it does not involve all students in the learning process (Twigg, 2002; Christopher, 2011; Hertz, 2012). Some students often feel anonymous in large classes. This anonymity can increase the propensity for misbehaving and or cheating in assessments depending on students' personal characters (Olasehinde, 2000). WSU is no exception to the issue of massification and the side effects that accompany it.

In 2015, two hundred and fifty BIS (EBIS1B1/BIS10B1) students were registered in the first year of study at one of its campuses (Butterworth campus) where the study was conducted. As the teacher of this large class, I found it challenging to engage all students adequately in the teaching and learning process. It became most difficult to prepare and mark assessment tasks, particularly for formative purposes. Consequently, students' written formative assessments were avoided to circumvent excessive marking. This real-life experience of teaching and assessing in large classes has motivated me to investigate alternative pedagogical approaches that could possibly influence students' learning experiences positively in these situations. According to the literature on alternative pedagogies, one such approach is the flipped classroom teaching approach (ITaP, 2013). This approach is believed to increase students' engagement in learning (Bishop and Verleger, 2013).

This year (2016) at WSU two hundred BIS students were exposed to the flipped classroom approach and became participants in this research study. An overview of the module is provided in section 1.7 (page 17).

#### **1.4 Significance of the study**

The study aimed at exploring the underpinning pedagogy as well as understanding the student's experiences of learning through the flipped classroom approach. It is envisaged that this study will contribute to the body of knowledge on educational technologies and innovative pedagogies that support learner-centred strategies and active learning especially in large class settings. Current day curriculum designers who are mandated with transforming higher education curricula may also benefit from the findings of this study.

#### **1.5 Research Problem, Critical Research Questions and Research Objectives**

Large classes, generally, provide many challenges to both lecturers and students alike (Schell, 2012). Lecturers and students consequently adopt different strategies to overcome the teaching and learning challenges (Hornsby and Onsman, 2014). The literature presents the

flipped classroom approach as a suitable strategy to improve students' engagement and performance in small classes (Musallam 2011; Center for Digital Education, 2013; Chen, Wang, Kinshuk and Chen, 2014), however, it is very limited at presenting the influence of the flipped classroom approach in large class settings (Center for Digital Education, 2013) without even considering specific disciplines. In fact, *“a review of previous studies shows that the flipped model is still underutilized and underexplored in the higher education context. Research and design models for flipped classroom in higher education are also insufficient”* (Chen *et al.*, 2014, p.16). This study therefore aimed to contribute to this conceptual gap in pedagogical design as well as to provide an understanding from the students' lived experiences of learning through a flipped classroom approach within the context of a large BIS class.

The main research question that the study sought to answer was:

In what ways does a flipped classroom approach influence the learning experiences of students in a large BIS class at Walter Sisulu University?

The sub-questions are:

1. What are the pedagogical underpinnings of a flipped classroom approach in a large BIS class at WSU?
2. How do students in a large BIS class at WSU experience learning through a flipped classroom approach?
3. Why do students in a large Business Information Systems class at WSU experience learning through a flipped classroom approach in the way that they do?

The objectives of this study were:

1. To discuss the pedagogical underpinnings of a flipped classroom approach used in a large Business Information Systems (BIS) class at WSU.
2. To understand the student's experiences of learning BIS through a flipped classroom approach in a large class at WSU.
3. To understand why the students experienced learning BIS through a flipped classroom approach in a large class at WSU in the way that they did.

## 1.6 The researcher's role

While the researcher's role is seldom discussed in quantitative studies, in qualitative studies the entire research process and the researcher are regarded as the instruments of data collection (Denzin and Lincoln, 2003). The qualitative researcher, therefore, is required to explain his or her responsibilities including biases, assumptions, expectations, and experiences that make him or her suitable to conduct the research (Greenbank, 2003). In addition, the researcher should explain whether his/her role was emic or etic (Punch, 1998).

I had an emic role in this study. Although I introduced the flipped classroom approach in the BIS class and played the roles of the moderator and the scribe in the focus group discussions, I did not influence the participants in the type of responses they gave to the questions. Similarly, I had my own perceptions about the flipped classroom approach and its influences, I reserved them and I presented the research findings in their genuine forms and attempted to eliminate preconceptions. This is what Pietkiewicz and Smith (2012) call '*bracketing*', "*allowing phenomena to speak for themselves*" (p. 362). In bracketing "*the researcher attempts to suspend presuppositions and judgements in order to focus on what is actually presented in the transcript data*" (Biggerstaff and Thompson, 2008, p. 179). I did this by describing the data in their genuine forms without altering their meanings. I attempted to verify the accuracy of the captured data in the focus group discussion by double-checking every statement I recorded before the disbandment of the group. The summary of the group discussion was read to the group and the group confirmed its validity. "*Utrecht, the Dutch approach is the second school of phenomenological analysis. This approach combines description and interpretation in uncovering thematic aspects of the experience*" (Reiners, 2012 p. 2). van Manen (2007, p. 12) argues that "*phenomenology is a project of sober reflection on the lived experience of human existence - sober, in the sense that reflecting on experience must be thoughtful, and as much as possible, free from theoretical, prejudicial and suppositional intoxications*". As it is evident from the citations above, van Manen (2007) and Reiners (2012) argue for the phenomenologist to reflect on their experiences of the phenomenon being studied, while Biggerstaff and Thompson (2008) and Pietkiewicz and Smith (2012) argue for the phenomenologist to reserve or bracket their views. I believe that bracketing, which is the feature of descriptive phenomenology, is important for the researcher to get data in their genuine form, I also consider the reflective practice of interpretative phenomenology as equally important. For this reason in this study I combined descriptive

phenomenology with interpretive phenomenology. Below is a description of the BIS module and the pedagogical approach that was adopted to teach it.

### **1.7 Overview of the Business Information Systems and the flipped classroom approach**

The National Higher Certificate (NHC) in Accountancy at WSU is offered as a mainstream and an extended programme. The mainstream programme runs for two consecutive years and the extended programme runs for three consecutive years. Irrespective of the offering type, BIS is offered in two modules. In the mainstream programme it is offered in the first and the second years of study, and in the extended programme it is offered in the second and the third years of study. Different codes are used to signify the module and its offering type. Consequently, BIS10B1 is the BIS module registered by students who enroll for the mainstream programme in the second year of study, while EBIS1B1 is the same module registered by students who enroll for the extended programme in the third year of study. B1 and B2 in the codes denote the semester in which the course is offered; B1 denotes a first semester module and B2 denotes a second semester, and the E before BIS signifies the extended programme. The syllabus offered in these modules is the same and subsequently the students enrolled for these modules were combined when attending lectures and wrote the same examination. These students became the participants in the study.

The BIS10B1/EBIS1B1 syllabus comprised the theory and the practical. But for the purpose of this dissertation my focus was on the theory component because it was taught in large class settings. In contrast to the theory lectures, during the practical sessions students were split into smaller groups to fit into the computer laboratories resulting in students experiencing theory sessions differently to the practical sessions. The five theory chapters of the BIS syllabus were, 1) communications and networks; 2) privacy, security, and ethics; 3) information systems; 4) databases; and 5) system analysis and design. I now move on to how the course was taught using the traditional lecture method before the flipped classroom approach was introduced and when the flipped classroom approach was used. The first two chapters of the syllabus were taught using the traditional lecture method and the last three chapters were taught using the flipped classroom approach.

### **1.8 Description of the lecture method**

On the first day of lectures the course outline (attached as Appendix A) was distributed and discussed together with the class ground rules to oversee all the contact sessions. It was

considered as the founding document for the curriculum, assessment and resources needed to complete the module. The summative assessment types and dates were agreed upon between me as the lecturer and the students. Readings in preparation for the forthcoming lectures were issued at the end of every lecture. In the following lecture, the topics were covered in the order that appeared in the course outline.

The traditional lecture focused more on the transmission of knowledge where key concepts or terms were explained for students to understand the chapters. Although students' participation was encouraged through posing questions, few students responded to the questions. In my observation, there were few students who demonstrated attempts of reading the material before the class.

A mini test with multiple choice and true or false questions covering the first two chapters was conducted. Students were required to form groups of ten and prepared assignments that they had to present as groups. An oral presentation was conducted that covered the first two chapters as well. The purpose of the presentation was to encourage students to adopt a deep approach to learning. The oral presentation was conducted after students had submitted the written assignments. It was used as the tactic for students to demonstrate ownership of the submitted assignment by answering questions based on the oral presentation as well as the written assignment. Students were required to understand the entire presentation and the lecturer would select students randomly to present random sections of the presentation. Below is a description of the flipped classroom approach that I introduced in the BIS classes.

### **1.9 The Flipped Classroom Approach**

Before the flipped classroom approach was introduced to students, I created an online storage space, the blend space, at [www.tes.com/lessons/dashboard](http://www.tes.com/lessons/dashboard). This website provided a platform to create lessons online. I then sourced all relevant online videos, case studies and notes, and stored them in the blend space as a single lesson. Then when I introduced the flipped classroom approach in class, I referred students to the blend space that I had created. Before the end of the lecture students were instructed to watch a specific video in the blend space. The direct link to my blend space was <https://www.tes.com/lessons/GZ0qPBy3hQqOGw/information-systems-in-an-organization>. After watching every online video, students were required to complete formative assessment questions before attending the next lecture. During the lecture, they were given a scenario or a case study that was related to the topic they were assumed to have learnt from the video.

The class activity gave them an opportunity to apply the concepts they learnt from the videos. Individual students were required to think about the questions. After the agreed time, they were required to share their views in pairs. Thereafter the pairs were required to share their views with the whole class. The class would then discuss the presenting groups' answers to approve or disapprove their correctness. In so doing the whole class became engaged. This approach is what will be called, think-pair-share in the rest of this study.

After the last three chapters of the syllabus were completed, a mini test similar to the first one was conducted, covering the last three chapters. Then the same groups of students were required to prepare assignments. After submitting the assignments, students were required to make oral presentations covering the last three chapters. In each group, students were selected randomly to present any section of the presentation. This was done to ensure that each student understood the entire presentation instead of memorizing the portion the student would present. This strategy encouraged students to work together because the marks they got were shared equally amongst the group members. For this reason, a number of students reported their nonparticipating group members to avoid being affected by them in the mark allocation process. In such cases nonparticipating students were excluded from the groups and had to do the tasks individually.

Sometimes the videos were interchanged with readings. The main difference between the traditional and the flipped classroom approach was that in the flipped classroom approach students were required to complete a formative assessment task outside the classroom before attending the subsequent lecture. The purpose of teaching this way was to improve students' engagement with the learning material and to improve students' public speaking skills.

### **1.10 Description of subsequent chapters**

This chapter outlined the background of the study and provided a description of the research context. Chapter two presents the literature reviewed to understand the phenomenon of the flipped class approach and the theoretical framework that provided the lens through which the data was produced and analysed. Chapter three provides insight into the research methodology and design that was adopted to achieve the objectives of the study. Chapter four presents the findings from both the quantitative and qualitative methods of data production while Chapter five provides a theoretical discussion of the findings that emerged from the data analysis. The dissertation ends with the conclusions and recommendations for future research in this area.

## **1.11 Conclusion**

The study was motivated by the real-life experience of teaching large BIS classes in consecutive years at WSU. I being the teacher of the Module, experienced the challenge of engaging students effectively in such large class settings. Although I theoretically acknowledged the value of formative assessment, I could not apply it adequately in my classes because of the workload and the time constraints. Additionally, I did not know possible alternative pedagogies to supplement the lectures in my teaching context. The literature recommended the flipped classroom approach as the suitable strategy for students' engagement, although in many cases, it was not tested in large class settings. This research study therefore, investigated the extent to which the flipped classroom approach influenced students' learning experiences in these large class settings.

In the next chapter the literature pertaining to the challenges and opportunities associated with large classes, blended learning and the flipped classroom approach is reviewed. The theoretical framework that provided a lens through which the data was produced and analysed is also presented.

## Chapter 2

### 2. *Literature Review and Theoretical Framework*

#### 2.1 Introduction

The purpose of this chapter is to highlight the key research that has been done in the higher education context where large classes and traditional as well as innovative pedagogical strategies are at play. The review of the literature will also assist in understanding the extent to which these pedagogical strategies impact on students' experiences of learning as well as their performances in assessments.

The literature suggests that there are many factors that inspire the students' academic achievement and determination in higher education. For instance, race (Cabrera, Nora, Terenzini, Pascarella, and Hagedorn, 1999), gender (Sanders, 1998), the high school achievement (Wolfe and Johnson, 1995), and parents' educational level (Ting and Robinson, 1998) are cited as some of the factors that influence students' retention in higher education. Notwithstanding the many factors associated with teaching and learning in higher education, the main focus on this study is the exploration of students' experiences of learning through the flipped classroom approach in large class settings. The literature review presents a brief account of the origin of massification in the context of WSU. The challenges of large classes and how they influence students' learning experiences are discussed. The theoretical framework used in the study is also discussed.

#### 2.2 Massification in the Walter Sisulu University context

Initially, access to higher education was open for the elite, but today we observe massive access (Lategan 2009) with universities accommodating almost everybody who qualifies. Research, teaching, and learning remain the fundamental attributes that certify the institution to be a university in spite of how the university transforms (Thomson, 2008; Lategan, 2009). In South Africa, post 1994, "...government... was faced with the formidable task of dismantling the structures of apartheid education" (Hall and Symes, 2005, p.199). The aim of the *Education White Paper 3 - A Programme for Higher Education Transformation of 24 July 1997* was to deal with the problems of equity, redress, democracy, autonomy and efficiency. From 1999, some higher education institutions were merged as a result of the requirements of the Higher Education Act of 1997. Consequently twenty-one universities were reduced to eleven universities, fifteen technikons were reduced to five universities of

technology and six comprehensive universities that are a combination of universities and technikons; one hundred and fifty technical colleges became fifty merged technical colleges, and one hundred and twenty colleges of education were either incorporated into universities or technikons (Mouton, Louw and Strydom, 2013). Walter Sisulu University (WSU) was subsequently established as a comprehensive university on 1 July 2005 through the merger of the former Border Technikon, Eastern Cape Technikon and the University of Transkei (WSU General Prospectus, 2016).

Despite the mergers, issues of access, equity and quality remain as challenges in higher education today. The historically excluded masses of students are now able to access higher education without being discriminated against racial barriers as before. This increasing access to South African higher education since 1994 has certainly resulted in the admission of a new category of students from disadvantaged backgrounds (Mouton *et al.*, 2013). There is no way of escaping this situation and Medlicott (2009) warns that

*We have to work with what we get, in terms of the students that we recruit, and we are responsible for putting in place the most effective teaching, learning and assessment strategies, so that the students we have recruited will succeed. If our curriculum and strategies are aimed, even [indirectly], in some idealized notion of the 'traditional' student of yesteryear, then we are clearly failing the student of today (p.12).*

This statement implies that curricula, pedagogies, and assessment strategies need to be updated continuously for students to improve their learning experiences.

The majority of Walter Sisulu University students fall into the category of students from disadvantaged backgrounds (Ncayiyana, 2011). Walter Sisulu University is a multi-campus institution that “has a footprint of about 1, 000 square kilometres across the urban and rural areas of the [Eastern Cape Province] region” (WSU General Prospectus, 2016, p. 6). It has four campuses, Mthatha, Butterworth, Buffalo City and Queenstown (WSU General Prospectus, 2016).

According to Ncayiyana (2011) WSU students' enrolments of about 26 000 exceed the department of higher education and training's (DHET) limitation of 24 000. Moreover, increased student numbers have a destructive effect on essentially all domains of the university life, including funding, infrastructure, and the institution's political environment.

*Space is in critically short supply, with staff scrambling to provide for 26 000 students in teaching facilities originally designed for 17 000. This, combined with the absence of proper timetables, sometimes leads to near-physical confrontations between staff competing for lecture rooms, the Assessor was told. Ironically, the overcrowding and overuse itself leads to accelerated deterioration of the infrastructure* (Ncayiyana, 2011, p. 15).

Ncayiyana (2011) asserts that WSU has one thousand four hundred academics who teach twenty-six thousand students in thirteen different delivery sites. From the above enrolment figures and lack of sufficient lecture rooms, students are placed in large classes for the teaching and learning as well as assessment endeavours. It is to this discussion that we now turn.

### **2.3 The implications of large classes on teaching, learning and assessment**

There is no established definition of a large class in the literature. Scholars in teaching and learning universally agree that the definition of a large-class depends on the institutional context, the subject or course being taught, the experience of the teacher or lecturer, and the class size compared to that of similar environments within a particular country or other countries (Twigg, 2002; Renaud, Tannenbaum, and Stantial, 2007; Monks and Schmidt, 2010; Christopher, 2011; Mngeni 2013). Christopher (2011) informally describes a large class as “*the one that feels large*” (p. 83) to the one who teaches it considering the attributes specified above. Some of the factors to determine whether a class is large or not could be the number of resources against the number of students (Christopher, 2011). “[*The*] *exact number does not really matter: what matters is how you, the teacher see the class size in your own specific situation*” (Renaud *et al.*, 2007, p.13) but the notion of student-lecturer ratio is not yet regulated in South African universities.

The literature suggests that large classes provide opportunities and challenges equally on students and lecturers (Twigg 2002; Monks and Schmidt 2010; Christopher, 2011; Mngeni 2013). Although there is a general ideology that large classes affect the quality of students’ learning (Monks and Schmidt 2010; Christopher, 2011), researchers, in general, have contradicting views about whether or not a correlation exists between a class size and students’ achievement (Monks and Schmidt 2010; Christopher, 2011; Mngeni 2013). Mngeni (2013) puts forward that there is no evidence to suggest that a relationship exists between class size and student performance. Small classes are commonly not better than large

classes when traditional achievement tests are used, but they are when additional performance criteria are used, such as long term retention, problem solving skills, and where assessment tasks measure higher level outcomes (Gibbs, Lucas, and Simonite, 1996; Monks and Schmidt 2010; Christopher, 2011; Mngeni, 2013). Gibbs *et al.* (1996) add that the main advantage of small classes over large classes is their ability to provide more opportunities for feedback and discussions than large classes do.

Christopher (2011) argues that large classes provide benefits to the institution, particularly the departments because they improve their chances of obtaining subsidy from the government through meeting the set targets in terms of students' headcount. Departments often argue that large classes “*generate a fair share of full-time equivalency (FTE)*” (p. 81) and in addition the institution saves money through hiring a small number of lecturing staff. Christopher (2011) claims that large classes make institutions deal better with limited resources. For instance, three classes of fifty students each can be grouped together in one lecture theatre and assigned to a single lecturer saving on hiring more lecturers. This is the claim most lecturers contest (Zappe, Leicht, Messner, Litzinger, and Lee, 2009) because they argue that large classes do not only

*dilute the learning process, [they] place an undue burden on faculty in terms of test monitoring, grading, office hours/student interaction, and course management. They further refer to this kind of teaching as ‘mob teaching’... They argue that large lecture sections are not only unfair to faculty in terms of teaching loads but [are also] unfair in terms of offering students a [poor] quality education* (Christopher, 2011, p. 81).

Jansen (2003) and Christopher (2011) add that some lecturers complain of being exploited with large amounts of homework, assignments, grading, multiple-test generation and monitoring that are difficult to complete within the scheduled time, especially without additional teaching assistants. Some lecturers go to the extent of hiring teaching assistants who they pay on their own because they cannot cope in handling large classes with limited resources.

“*Lectures, as a rule, have little educational value*” (Christopher, 2011, p. 85). In a traditional lecture, “*the instructor plays the role of information conveyor, while the students assume a receiver role with primary responsibilities of listening and note-taking*” (Zappe *et al.*, 2009); so it is lecturer-centred. Even though the lecture method has enormous condemnation in

literature, it is still used worldwide as the dominant teaching method in large class settings in most institutions (Cuseo 2007; Christopher 2011). The main drawback of a traditional lecture is its failure to engage all students in the learning process (Zappe *et al.*, 2009; Christopher, 2011). In addition the traditional lecture does not acknowledge students' diversity. It assumes the ideology that students come up with the same academic preparation, adopt the same learning styles, require the same motivation to learn, have the same interest in the subject, and possess the same ability to learn. It fails to recognise that students have different needs requiring more individual courtesy and more opportunity for collaboration than others. It fails to inspire active participation of students and denies them an opportunity to learn cooperatively from one another (Twigg, 2002; Christopher, 2011).

Govender (2013) emphasizes that previously disadvantaged institutions are doing a disservice to students coming from disadvantaged backgrounds by admitting them in large numbers but not teaching them in ways that add value to their skills and qualifications. Despite Govender's assertion, Renaud *et al.* (2007) maintain that effective teaching can still be realised in large classes when the lecturer is trained to engage all students in the classroom. It is precisely to this point that the study makes a contribution in exploring the extent to which a flipped classroom approach influences student's experiences of learning within large class settings.

Students too have different perspectives of large classes. Their perspectives of large classes depend on their personal characteristics and personal motivation (Trees and Jackson, 2007). Some students enjoy working in groups and participating in large class activities because they develop personal and academic skills (Trees and Jackson, 2007). On the contrary, some students feel disconnected and anonymous to both the lecturer and to their classmates (Svinicki and McKeachie, 2010). Consequently they do not take responsibility for their learning, have reduced levels of motivation to learn and develop a habit of not attending classes regularly (Cooper and Robinson, 2000) and do not participate in class activities (Trees and Jackson, 2007).

Kerr (2011) argues that student assessment in large classes is a huge challenge to the faculty. Lecturers, use multiple choice questions in an attempt to reduce marking loads for themselves. In most instances marking is automated and many of the questions are pitched at testing lower orders of cognitive demand. In some institutions lecturers undertake professional development in order to learn better ways of designing multiple choice questions that assess for developing higher order learning (Reddy *et al.*, 2016). Institutionally organised

staff development courses on pedagogy and assessment strategies have their own challenges. The minimum requirement for staff to be appointed at lecturer level at most Universities is a Master's degree in the Discipline that they are lecturing in and thus most of them do not possess any higher degrees in how to teach and assess at universities (Reddy *et al.*, 2016). Most staff are therefore underprepared to teach and assess large classes in this context. My study looked at the pedagogical underpinnings of the flipped classroom approach and the ways in which this method of teaching and learning can influence student's experiences of learning as well as can inform lecturer's pedagogical practices.

Despite the pedagogical practices that lecturers engage in, Olasehinde (2000) claims that students resort to cheating in tests and examinations as a result of their fear of failure and the desire to meet societal expectations. Olasehinde (2000, p. 4) identifies the nine common cheating techniques students use as, "*giraffing, lateral connection, live wire, contract, rank Xeroxing, missile catch, sign language, time-out, and stroke*". When giraffing, students stick their necks to see another students' answers. In lateral connection, students devise a sitting arrangement where the 'knowledgeable' student is placed at a strategic position, preferably at the centre of the cheating group. In a live wire, students access live questions before exam time with the assistance of the lecturer. Similarly, in a contract, some students have influence at modifying grades through the assistance of the lecturer. There is usually a mutual benefit in this regard between the student and the lecturer. In rank Xeroxing, students collect and copy a colleague's answers precisely. In a missile catch, students write an answer on a piece of paper, squeeze the paper and throw it to a colleague. In sign language, students use fingers and sounds as codes to respond to questions. In time-out, some students go to the restroom to read up the answer to a question. Lastly in stroke, students pretend to be sick during examinations to generate the examiners' sympathy when marking (Olasehinde, 2000).

In an attempt to circumvent these cheating strategies, Olasehinde (2000) encourages universities to improve their exam moderation strategies, develop exam preparation strategies, and revive their pedagogies. The implications of cheating in examinations are invalid students' scores that do not reflect the true students' abilities. Subsequently, decisions based on fraudulent scores are worthless. Universally, such graduates are incompetent and ultimately become incompetent officers who consequently become parents to future cheaters (Olasehinde, 2000).

Wadesango and Machingambi and Wadesango (2011, p. 290) suggests that universities "*should put in place teaching and learning strategies, structures and processes that are*

meant to support and promote meaningful participation of learners from diverse socio-economic backgrounds”. Effective teaching prepares students with appropriate skills that enable them to compete globally (Grapragasem *et al.*, 2014). Sharing the same sentiments, Cooper *et al.* (2010) advocate the interactive lecture as a replacement to the traditional lecture method asserting that it “*provides active learning opportunities that the research literature [confirms] as essential for deep processing of course content*” (p. 2). Hosapatna *et al.* (2015) also acknowledge that a number of teaching approaches, such as problem-based learning, team-based learning and case method teachings are increasingly accepted as strategies that mitigate problems associated with traditional lectures. My study looked at two of these innovative teaching approaches namely blended learning that formed part of the flipped classroom approach. These approaches are dealt with below.

#### **2.4 Blended learning and the flipped classroom approaches**

Blended learning is a teaching strategy that is believed to promote higher order thinking skills. It uses a mixture of face-to-face and online learning activities, and is believed to increase understanding, interaction, and involvement in the learning process (Kenney and Newcombe, 2011). “*[It] is a growing teaching approach in all types of higher education institutions and ...is the single-greatest unrecognized trend in higher education today*” (Kenney and Newcombe, 2011, p. 48). Major reasons for lecturers to adopt the blended learning approach are to increase student engagement and involvement in the learning process, and to improve student learning (Kenney and Newcombe, 2011). Ebenezer and Omane-Antwi (2014) and Selim (2007) recommend electronic learning (e-learning) as a solution to many massification issues. Selim (2007) asserts that e-learning can be effective when it takes into consideration the following four critical success factors within a university environment 1) the instructor; 2) student; 3) information technology; and 4) university support; and also adds that all these factors should be integrated critically without compromising one over the other. Ebenezer and Omane-Antwi (2014) recommend e-learning to be extended to mobile learning (m-learning) where lecturers and students can use their mobile devices (smartphones and laptops) to access the Internet. This strategy lessens the problem of inadequate access to online material that can be experienced by students in rural areas who, in most cases, suffer from unavailability of internet facilities. Ebenezer and Omane-Antwi (2014) claim that the effective and strategic implementation of mobile learning (m-learning) at universities can reduce most of the operational issues like overcrowded classrooms, insufficient books in libraries, and lack of adequate accommodation. “*Large*

*class environments appear to be a phenomenon that is here to stay*” (Hornsby and Osman, 2014, p. 3).

The flipped classroom approach is one blended learning strategy in which lecturers generally give lecture videos to students to watch outside the classroom time. It is recommended that lecturers use videos they produce themselves to shift the form of instruction from the classroom to the homework setting (Musallam, 2011; Hertz, 2012). When the lecturer and students meet in class they discuss the video presentation in-depth (ITaP, 2013; Bishop and Verleger 2013). ITaP defines the term ‘flipped classroom’ as

*a wide range of blended instructional methodologies in which students remotely access prepared lecture materials and then engage in structured in-class activities. While there is no singular model for a flipped classroom, the underlying concept is to reverse the traditional approach, with digital lecture materials viewed at home in advance of class, and the in-class time used to work through problems, advance conceptual knowledge, and engage in peer-centred learning activities* (ITaP, 2013, p. 3).

One advantage of flipped classroom is that faculty can allocate time to help students “*develop synthesis and explore application during class time through: experiential exercises, team projects, problem sets, and activities that previously had been assigned as independent homework. In particular, students can receive direct faculty input on those segments of the material that have historically been the most [difficult] or ambiguous*” (ITaP 2013, p. 6).

Similarly, Bishop and Verleger (2013, p. 2) assert that the flipped classroom is a new pedagogical method that

*employs asynchronous video lectures and practice problems as homework, and active, group-based problem solving activities in the classroom. It represents a unique combination of learning theories once thought to be incompatible - active, problem-based learning activities founded upon a constructivist ideology and instructional lectures derived from direct instruction methods founded upon [behaviourist] principles”.*

ITaP (2013) also warns that “*[just] because [the lecturer records] something, or uses a recorded material, does not mean that... students will want to watch, or see the relevance in watching it... it is still a lecture* (p. 11). This statement emphasises the

need to integrate online content with interactive class discussions for students to gain higher-order thinking skills and the need for the developed videos to engage students in the learning process. It is to this discussion from the literature on student's experiences of learning through flipped classroom approaches in large classes that I now turn.

## **2.5 Students' experiences of learning through a flipped classroom approach**

Thus far there is very limited research that focuses at understanding students' experiences of using blended learning in their studies, let alone the flipped classroom approach on large class settings (Noor, Attaran and Alias, 2015). Consistent with this statement, Machika, Bruin and Albertyn (2014, p. 375) argue that *"to date not much research has been conducted on the student experience within a large class setting at South African higher education institutions"*. This is the conceptual and methodological gap that my study contributes to. The available studies record that course contexts, experience of process and learner orientation influence the meaning of blended learning (Noor *et al.*, 2015) supplemented with adequate technical support (Moukali, 2012) and teacher training (Peruso, 2012). Students record the following concerns with regard to blended learning, outdated learning materials, Internet connectivity and computer access, learning support, availability of instructors in online sessions, the use of learning centres, and technical issues (Bhalalusesa, Lukwaro, and Clemence 2013; Noor *et al.*, 2015). Learning resources result in some courses having links to files that do not open or play some animations, video clips or audio recordings. Students thus become frustrated and their enthusiasm to watch videos destroyed. This is often caused by the instructors' lack of technical knowledge and sometimes the institutions' poor bandwidth (Bhalalusesa *et al.*, 2013). These innovative pedagogical approaches may also have their limitations. This is discussed below.

## **2.6 The limitations of the flipped classroom approach**

Just as a coin has two sides, so too is the flipped classroom approach; it has advantages and disadvantages. Over reliance on the Internet as the primary source of videos for students' access is a concern because some students have poor or no Internet access outside the class (Hertz 2012; Houston and Lin 2012). The lecturer is thus required to develop lecture videos that can be made available in formats that can be accessed to students through various means, such as smartphones and DVD players (Hertz 2012; Houston and Lin 2012). However, the supposed technology needed for viewing or interacting with the videos may not be available in every student's home (Houston and Lin 2012; Hertz 2012; Zhang 2014).

Zhang (2014) asserts that lecturers can use blended learning tactlessly resulting in disproportion between online and traditional delivery of content. Uploading all course material online without engaging students in the learning process does not generate any better learning outcomes. It is against this background that Houston and Lin (2012) argue for lecturers to prepare videos carefully and spend large amounts of time and effort to make the flipped classroom experience effective. The lecturer, thus requires to develop video recording skills and prepare out-of-class and in-class activities carefully and integrating them logically for students to understand and be motivated to attend the class prepared.

Occasionally videos are poorly designed and tend to be boring for some learners and sometimes too long and lack active engagement of students (Nielsen 2012; Chen and Chen 2014). Poorly designed videos may include excessive use of multimedia features like animation and colours that distract students' engagement in the learning process. Lack of students' engagement with pre-class activities results in students' involvement on class discussions without prior knowledge that is assumed to have been obtained through engagement with online material (Zhang 2014; Chen and Chen 2014). Lecturers, therefore, need to develop engaging questions that trigger students' thinking at high levels resulting in them adopting a deep approach to their learning while addressing misunderstandings in the lessons (November and Mull 2012). Nonetheless, it is the responsibility of students to take ownership of their own learning and complete the out-of-class activities (Hawks 2014). In order to understand how students experienced this blended learning through the flipped classroom approach, a theoretical lens that accounts for such complex teaching and learning experiences is required. Below is a discussion on the frameworks that were deemed most appropriate to produce the data that was required to respond to the objectives of the study.

## **2.7 Theoretical Framework**

### **2.7.1 Complex Adaptive Blended Learning Systems framework**

I acknowledge that the "*[l]earning and teaching experiences and outcomes are affected by the educational conceptions of the learner or academic, the approaches to learning or teaching adopted, and the individual's focus of awareness*" (Knewstubb, 2016, p. 526). It is for this reason that this study was underpinned by two related theoretical frameworks, the Wang *et al.*'s Complex Adaptive Blended Learning Systems (CABLS) framework (Wang *et al.*, 2015) and Biggs' theory of constructive alignment (Biggs, 2003). The CABLS framework provided the lens to identify and discuss the factors that influenced the students'

experience of blended learning at WSU. Constructive alignment as advocated by Biggs (2003) was used as a framework to assess the pedagogical underpinnings of the flipped classroom approach adopted for the large class setting of the BIS module. Below is a discussion on how and why these frameworks were useful in the study.

Wang *et al.* (2015) summarise various frameworks and their limitations that form the basis for the framework they propose. Their general critique of other models is that they fail to provide a comprehensive view of blended learning because they do not use a complex adaptive systems approach. “Consequently, blended learning still seems to be a giant puzzle... consisting of intertwined disjointed parts, all trying to connect” (Wang *et al.*, 2015, p. 381). On the contrary, the integration of technology-oriented learning with campus-based learning makes learning more complex (Wang *et al.*, 2015); hence their recommendation of complex adaptive systems as a theory for re-conceptualizing blended learning.

Wang *et al.* (2015) define complex systems as layers of integration where each system is part of a larger system, which in turn is part of an even larger system, which is part of other larger systems. At each level, each system is at the same time independent and integrated with the systems at its level, above it, and below it. Figure 1 below depicts the summary of the elements of the CABLS framework as advocated by Wang *et al.* (2015).

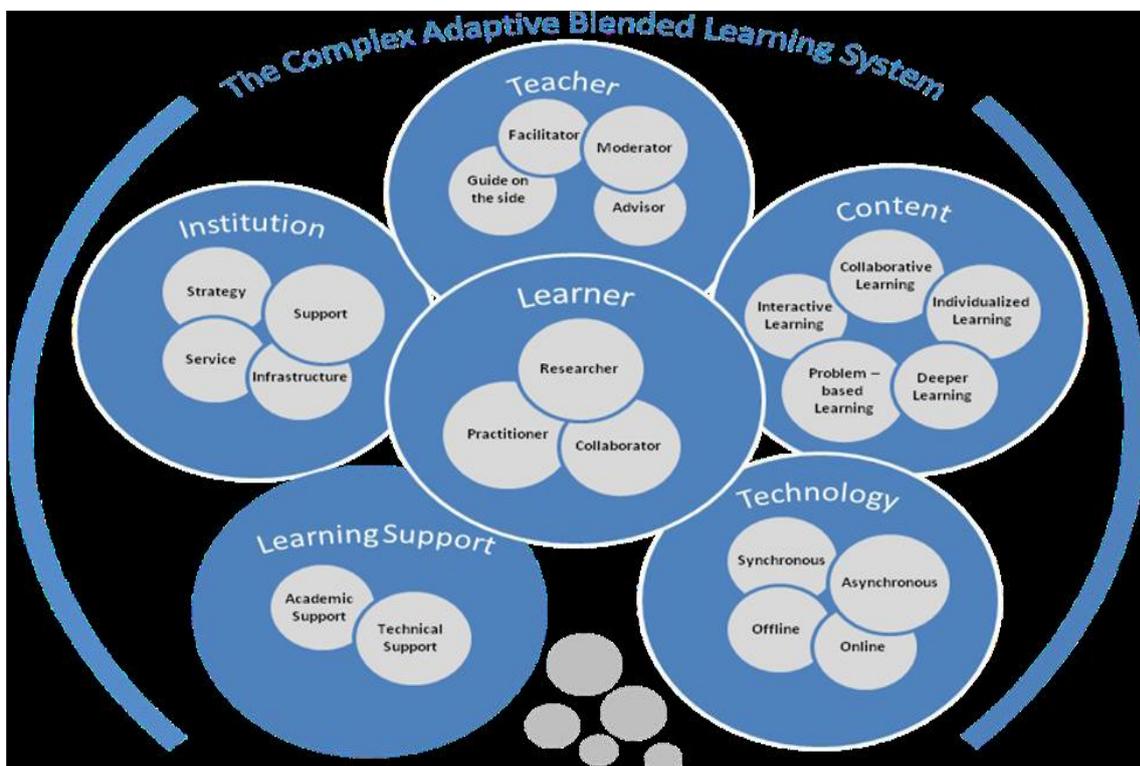


Figure 1 Complex Adaptive Blended Learning Systems Framework (Source: Wang *et al.*, 2015, p. 381)

The six complex subsystems of the CABLS are the institution (strategy, support, service and infrastructure), teacher (facilitator, moderator, guide on the side, advisor), learner (researcher, practitioner, collaborator), content (collaborative learning, interactive learning, individualised learning, problem-based learning, deeper learning, technology (synchronous, asynchronous, offline, online), and learning support (academic support, technical support). All these subsystems differ from institution to institution, and from time to time. Hence this framework provided the lens through which data was produced based on the above complex subsystems. The questionnaires and focus group discussion employed as data production strategies in this study engaged the participants on issues raised in the CABLS framework. The other framework that was used was Biggs (2003) theory of Constructive Alignment. This is discussed below.

### **2.7.2 Constructive alignment**

Constructive alignment as advocated by Biggs (2003) supports the impression that students build their own learning through relevant learning activities. The teachers' role is to construct a learning environment that supports as well as aligns the learning activities suitable for achieving the desired learning outcomes. The curriculum and its intended outcomes, the teaching approaches used, and the assessment tasks are associated with each other. Since all the activities are interconnected, the students find it difficult to break away from learning appropriately (Warren, 2004).

*Constructive alignment' starts with the notion that the learner constructs his or her own learning through relevant learning activities. The teacher's job is to create a learning environment that supports the learning activities appropriate to achieving the desired learning outcomes. The key is that all components in the teaching system - the curriculum and its intended outcomes, the teaching methods used, the assessment tasks - are aligned to each other. All are tuned to learning activities addressed in the desired learning outcomes. The learner finds it difficult to escape without learning appropriately (Biggs, 2003).*

The 'constructive' part of constructive alignment is the ability of the students to construct their meaning through relevant learning activities. Meaning is something that students create for themselves. Teaching is just an instrument for learning. The 'alignment' aspect refers to what the teacher does, which is to set up a learning environment that supports the learning activities appropriate to achieving the desired learning outcomes. The key is that the teaching

methods used and the assessment tasks are aligned with the learning activities assumed in the intended outcomes. When the alignment is properly planned and achieved, the student “*is in a sense 'trapped', and finds it difficult to escape without learning what he or she is intended to learn*” (Biggs, 2003; Warren, 2004).

The following diagram summarizes the concept of constructive alignment (Warren, 2004)

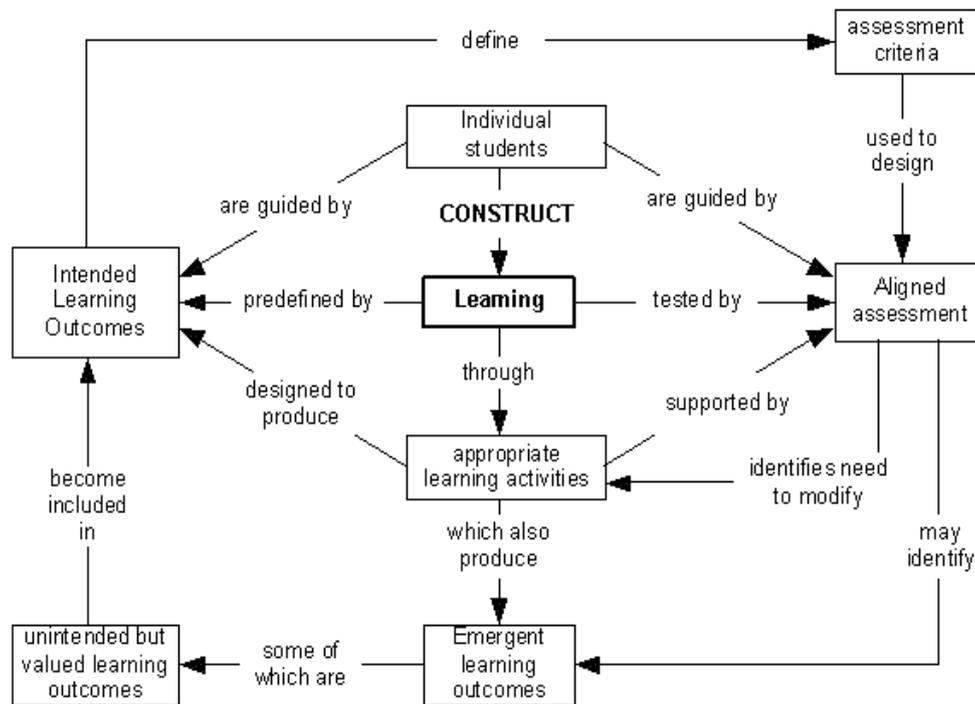


Figure 2 Constructive Alignment (Source: Warren, 2004)

Figure 2 shows that constructive alignment begins with identifying the intended learning outcomes that are often stipulated in the course outline. It is these outcomes that define the assessment criteria that are used to design the aligned assessment. The aligned assessment may produce emergent learning outcomes that may be unintended but valuable learning outcomes that may be included as intended learning outcomes. Individual students use the intended learning outcomes and aligned assessment as the guides to construct their learning through appropriate learning activities that produce the emergent learning outcomes (Warren, 2004). This framework was used to determine the extent to which the intended learning outcomes, teaching and learning strategies and the assessments used in the flipped classroom approach were constructively aligned.

## **2.8 Conclusion**

In this chapter the literature related to teaching and learning approaches in the context of massification of higher education was discussed. Recent research around Blended learning and the Flipped Classroom approaches as well as student's experiences of teaching, learning and assessments were also presented. The theoretical frameworks that underpinned the data production strategies were discussed with the aim of showing why and how they were relevant and appropriate to this study. The next chapter will provide a detailed explanation of the research methodology and design of the study.

## Chapter 3

### 3. *Research Methodology, Design and Methods*

#### 3.1 Introduction

The purpose of this chapter is to outline the choice of research paradigm, the research design, and the research methods that were used in the data production process in order to respond to the objectives of the study. The rationale for using these methods is provided followed by a discussion on how the data was analysed. An explanation of the credibility of the study as well as the ethical considerations and limitations of the study follow.

#### 3.2 Research Paradigm

Research is an analytical investigation or inquiry in which data are collected, analysed and interpreted to record the understanding, description, prediction or control of an educational or psychological phenomenon or empowerment of individuals (Mackenzie and Knipe, 2006). *“Paradigmatic assumptions and perspectives impact significantly on methodological choices, and demand a consideration of different research methods”* (Maree and van der Westhuizen, 2012, p. 32).

*“Research terminology is notoriously slippery, with authors using the same term to refer to very different phenomena. Case study, for example, has been termed a method, approach, methodology, design, strategy, and style”* (Rule and John, 2011, p. viii). Walter (2006) defines methodology as the standpoint for the research that is influenced by the model in which the theoretical perspective is positioned or developed. All research projects adopt a particular paradigm; although, there are studies that are silent about their paradigms. *“Without nominating a paradigm as the first step, there is no basis for subsequent choices regarding methodology, methods, literature or research design”* (Mackenzie and Knipe 2006, p. 194). Some authors refer to paradigms in different ways. Creswell (2003) discusses the interpretive framework in terms of knowledge claims, while Neuman (2000) discusses it as epistemology or ontology, or sometimes research methodologies.

This study is located in the interpretivist/constructivist paradigm. Mackenzie and Knipe (2006, p. 196) state that *“the interpretivist/constructivist researcher tends to rely upon the participants' views of the situation being studied”*. Although the interpretivist/constructivist paradigm usually operates using mainly qualitative methods it provides an opportunity for the use of *“multiple methods, different worldviews, and different assumptions, as well as different*

*forms of data collection and analysis in the mixed methods study*" (Mackenzie and Knipe, 2006, p. 196). This study uses both a quantitative method (questionnaire) as well as a qualitative method (focus group discussion) to produce data. This will be detailed later on in the chapter.

The interpretivist/constructivist paradigm supports descriptive writing that is embedded in the data themselves as a way of signifying the presence of the writer in the research field (Saldana, 2011). As I have explained earlier in Chapter 1 (the researcher's role on page 15), I have been an integral part of the research process as both teacher of the BIS module as well as the researcher who produced and analysed the data. As the researcher I wanted to understand the lived experiences of the students who undertook the BIS Module through the flipped classroom approach. In order to understand the participant's lived experiences, I had to use a methodology that provided a framework to interpret and explain those lived experiences. Below is a discussion on how phenomenology, which is a research design that foregrounds participants lived experiences, was adopted as a research design for this study.

### **3.3 The Research Design**

The mixed methodology approach is argued to be "*relatively new in the social and human sciences as a distinct research approach*" (Creswell, 2014, p. 266). For this reason, Creswell (2014) argues that researchers adopting the mixed method approach need to be aware of the following characteristics that define the mixed method approach and incorporate them in their studies:

*It involves the collection of both qualitative (open-ended) and quantitative (closed-ended) data in response to research questions or hypotheses. It includes the analysis of both forms of data. The procedures for both qualitative and quantitative data collection and analysis need to be conducted rigorously (e.g., adequate sampling, sources of information, data analysis steps). The two forms of data are integrated in the design analysis through merging the data, connecting the data, or embedding the data. These procedures are incorporated into a distinct mixed methods design that also includes the timing of the data collection (concurrent or sequential) as well as the emphasis (equal or unequal) for each database (p. 266).*

The study uses an interpretive phenomenological analysis (IPA) as a research design. Phenomenology is a qualitative research approach that studies the impression of an incident

(Creswell, 2007). Its purpose is to produce a broad and “*humanistic understanding of a phenomenon by analysing the lived experiences of the individuals who have experienced the phenomenon*” (Ferrucci and Tandoc Jr, 2015, p. 177). Its aim is to attain a deeper understanding of the nature or meaning of the participants’ lived experiences. Its call is often to discover what people experience and how they interpret the world as completely as possible (Patton, 2002).

“*The IPA study is a dynamic process with an active role of the researcher which will influence the extent to which they get access to the participant’s experience and how, through interpretative activity, they will make sense of the subject’s personal world*” (Pietkiewicz and Smith, 2012, p. 362). The analytical process in IPA is normally described in terms of a dual interpretation process, because the participants make meaning of their own world and the researcher tries to make sense of the participants’ meaning making (Smith and Osborn, 2008). The study adopted the Dutch approach as explained in section 1.6 on page 15. I now turn to a discussion on how the participants were selected and the strategies that were employed to analyse the data that was produced using the above mentioned methods.

### **3.4 Sampling and data analysis**

Fellegi (2010) identifies the two types of surveys as a census survey and a sample survey. The difference between these two types of survey is that “*a census collects information from all units of the population, while a sample survey collects information from only a fraction (typically a very small fraction) of units of the population*” (Fellegi, 2010, p. 19). This study adopted a census survey questionnaire. Only students who were introduced to the flipped learning approach were required to participate in the study. In a population of two hundred students (N=200), one hundred and thirty-four students filled and returned the questionnaire (134 responses). Although a census survey is not perfect, like any other data collection instruments, it was considered as the most appropriate in the study because a population of 200 units of analysis was considered to be manageable. Fellegi (2010, p. 31) identified the four common types of errors associated with census surveys as “*coverage, measurement, nonresponse [and] processing*”. Coverage error often occurs when it is difficult to reach every prospective participant in the study because the population is large. Common characteristics of coverage error include “*omissions, erroneous inclusions, duplications and misclassifications of units in the survey frame*” (Fellegi, 2010, p. 31). Measurement error

occurs when there is misunderstanding from the respondent or the interviewer. The causes of the misunderstanding could possibly result from

*the use of technical jargon; the lack of clarity of the concepts (i.e., use of non-standard concepts); poorly worded questions; inadequate interviewer training; false information given (i.e., recall error, or lack of ready sources of information); a language barrier; [and] poor translation (when several languages are used)* (Fellegi, 2010, p. 32).

Nonresponse may occur “*when the respondent does not know the answer to a question, refuses to answer a question, forgets to answer or follows the wrong flow through the questionnaire*” (Fellegi 2010, p. 33). Lastly, “*processing errors can occur during data coding, data capture, editing or imputation. Like all other errors, they can be random in nature, and inflate the variance of the survey’s estimates, or systematic, and introduce bias*” (Fellegi, 2010, p. 33).

Descriptive statistics was used to analyse the survey data. “*Descriptive statistics gives numerical and graphical procedures to summarize a collection of data in a clear and understandable way...*” (Jaggi, 2003, p. 1). The survey questionnaire data was captured through Google forms and Microsoft Excel was used to prepare the graphs.

A snowball sample (n=11) was used for the focus group discussions, consisting of six females and five males. “*Snowball sampling is the method of asking study participants to make referrals to other potential participants, who in turn make referrals to other participants, and so on*” (Davis, Gallardo and Lachlan, 2010, p. 165). The class representatives volunteered to recruit participants whom they identified to be interested in participating in the discussion when I presented the purpose of the study to the entire group of students.

Thematic analysis was used to analyse the qualitative data. “*Thematic Analysis is a type of qualitative analysis. It is used to analyse classifications and present themes (patterns) that relate to the data. It illustrates the data in great detail and deals with diverse subjects via interpretations*” (Alhojailan, 2012, p. 40). Themes were derived from the data using the lenses of the CABLS framework and the theory of constructive alignment as an analytical framework that was imposed on the BIS Module documents. This will be elaborated further in the qualitative analysis of the data that is presented in Chapter 4. Empirical studies of this

nature require the researcher to be aware of issues such as reliability, validity and trustworthiness in the research process. These issues are discussed below.

### 3.5 Credibility, reliability, validity and trustworthiness of data

The methodology that was adopted in the study was suitable to produce data in order to respond to the research questions. Since the study adopted a sequential quantitative-qualitative analysis, quantitative data was analysed first followed by the qualitative data.

The survey questionnaire, as was used in this study to produce quantitative data is often used in studies where a large group of participants is required. The purpose of using the survey is, generally, to take a broad view from a sample of the population so that interpretations can be made about some characteristics, attitudes, or behaviours of the population (Creswell, 2014). The research population (N = 1, 000) would generally be students registered for BIS, that is, *BIS10B1 and EBIS1B1*, at all WSU's four campuses. But since the flipped learning approach was introduced only in one of the WSU campuses the viable population dropped to two hundred students (N=200). A census survey in the form of a questionnaire was conducted with all students registered for the course at one of the WSU campuses, where I teach (Butterworth campus), and I distributed the questionnaire to all of them. One hundred and thirty-four students returned the questionnaires resulting in the response rate of 67%. Although there is generally, no definite rule to measure the accuracy of the sample size (Kelley *et al.* 2003), Maree and Peterson (2012) acknowledge that "*larger samples... represent the population better than smaller samples and their findings [are] more accurate*" p. 178). The Slovin's formula is used to validate the significance of the response rate (Tejada and Punzalan, 2012).

$$n = \frac{N}{(1+Ne^2)}$$

Figure 3 Slovin's Formula

Figure 3 above shows Slovin's formula where *n* is the sample size, N is the known population, and *e* is the error level or the percentage of confidence and the confidence interval is 95% (Tejada and Punzalan, 2012). When applying the formula to my research population (N = 200) at 95% confidence interval, (*e* = 5%) resulting in the formula  $n = 200 / (1+200 \times (0.05)^2)$ , which is equal to 200/1.5, which is equal to 133. This means that the representative sample size for two hundred participants is hundred and thirty-three participants. The representative sample size enables the sample to have both internal and external validity. This implies that the findings of the study are not only specific to the

participants, they are generalizable to the rest of the population, that is, to all students who were exposed to the flipped learning approach (N = 200). I now proceed to discuss issues that ensured credibility of the qualitative data.

The terms validity, reliability and generalisability are commonly used in quantitative studies and are argued to be inappropriate to authenticate qualitative studies. In qualitative studies the alternative terms are truth value, consistency and applicability (Noble and Smith, 2015). Noble and Smith (2015) determine nine strategies to ensure the trustworthiness of data. The nine strategies are,

1. *Accounting for personal biases which may have influenced findings.*
2. *Acknowledging biases in sampling and ongoing critical reflection of methods to ensure sufficient depth and relevance of data collection and analysis.*
3. *Meticulous record keeping, demonstrating a clear decision trail and ensuring interpretations of data are consistent and transparent.*
4. *Establishing a comparison case/ seeking out similarities and differences across accounts to ensure different perspectives are represented.*
5. *Including rich and thick verbatim descriptions of participants' accounts to support findings.*
6. *Demonstrating clarity in terms of thought processes during data analysis and subsequent interpretations.*
7. *Engaging with other researchers to reduce research bias.*
8. *Respondent validation: includes inviting participants to comment on the interview transcript and whether the final themes and concepts created adequately reflect the phenomena being investigated.*
9. *Data triangulation, whereby different methods and perspectives help produce a more comprehensive set of findings* (Noble and Smith, 2015, p. 3-4).

Patton (2002) argues that “*triangulation strengthens a study by combining methods. This can mean using several kinds of methods or data, including using both quantitative and qualitative approaches*” (p. 247). The study did not only combine the research methods, it also used a combination of data collection instruments; that is document analysis, survey questionnaire and focus group discussion. As a moderator during the focus group discussion, I guarded against the individuals dominating the discussion. I took care of this challenge by discussing the ground rules before beginning the discussion (see Appendix E for the ground rules). I bracketed my presuppositions in the data collection process and recorded data in its natural form. I verified the accuracy of my transcript by double-checking it with the

participants during the focus group discussion. The summary of the discussion was read to the participants and they confirmed its accuracy. Biggerstaff and Thompson (2008) and Pietkiewicz and Smith (2012) argue that bracketing and confirming captured data are good means for maintaining reliability, trustworthiness and validity of data in phenomenological studies. The study adopted the strategies Noble and Smith (2015) propose as it will be evident in Chapter 4.

### **3.6 The Research Methods**

The study used a mixed methods approach of combined qualitative and quantitative methods. On the quantitative side the study used a survey questionnaire with closed questions. The purpose of the survey was to obtain a broad view from a sample of the population (134 out of 200 students) so that interpretations could be made about some characteristics, attitudes, or behaviours of the population (Creswell, 2014). This study used a sequential explanatory design, meaning that “*the collection and analysis of quantitative data [are] followed by the collection and analysis of qualitative data*” (FoodRisc Resource Center, 2016). Combs and Onwuegbuzie (2010) term this approach as the sequential quantitative-qualitative analysis. The quantitative data was collected using Google Forms and analysed using Microsoft Excel to design graphs and simple tables summarising participants’ responses to questions. Descriptive statistics was employed on the quantitative data and thematic analysis (TA) was employed on the qualitative data using codes and themes (Saldana, 2011; Nieuwenhuis, 2012). The study thus used the inductive codes; that is, codes that were derived from the data (Frith and Gleeson, 2004). The emergent themes were guided by the CABLS framework discussed in the previous chapter (section 2.7.1, page 30).

### **3.7 Data collection process**

Data was produced through document analysis, a survey questionnaire and focus group discussions. The module documents and templates were analysed with the aim of determining the pedagogical underpinnings of the flipped classroom teaching approach. The documents included the course outline, teaching plans, study material, assessment tasks, and students’ results as well as supplementing videos. The semi-structured questions for the focus group were designed to get a deeper understanding of the questions presented in the survey, and aimed to probe further into the students’ experiences of using the flipped learning approach. The questions may be viewed in Appendix E.

Golafshani (2003, p. 2) asserts that

*a quantitative researcher may prepare a list of behaviour to be checked or rated by an observer using a predetermined schedule or numbers (scales) as an instrument in his/her method of research. Thus, a quantitative researcher needs to construct an instrument to be administered in standardised manner according to predetermined procedures.*

This is precisely what was done in the study. The survey questionnaire consisted of fifteen closed questions testing the extent to which the flipped classroom approach influenced certain behaviours in students' learning. The extent of the influence was measured in a five-point scale where 1 represented "strongly agree" and 5 representing "strongly disagree". The focus group discussion attempted to discover the underlying reasons why students experienced learning through the flipped classroom pedagogy in the way that they did. A focus group discussion took place on the 15<sup>th</sup> of September 2016. The discussion continued for four hours. The research question and the sub-questions were introduced to the participants and participants were given twenty minutes to write down their answers to the three critical discussion questions, see Appendix E for the focus group schedule.

Eleven participants formed the sample for the focus group discussion. The participants that consisted of six females and five males were selected using the snowball approach as explained in section 3.4 page 37.

### **3.8 Ethical considerations**

The University of KwaZulu-Natal and Walter Sisulu University accepted my research proposal and subsequently the ethical clearance for this study was granted. Participation in the study was voluntary and I requested students to sign the informed consent document (see Appendix B) agreeing to partake in the study voluntarily. Throughout the project I abided by the UKZN Research Ethics Policy that binds anyone who is involved in research on or off the campuses. In terms of the policy participants have a right to participate or not to participate or to terminate the participation at any time, and that right should be respected. To conform to the policy, I wrote the participants rights on the informed consent form and explained the policy to the participants. As a result of participants' awareness of their rights in the research process they decided not to sign the consent form because they were concerned with their anonymity. Although I assured them of the confidentiality of the research data and ensuring them that their particulars would not be disclosed, they maintained not to sign the consent forms; and I respected their decision. The eleven participants who filled the consent forms

were the ones who were prepared to participate in the focus group discussion. I requested them to sign the consent forms so that I could get their contact details to arrange the meetings with them.

### **3.9 Limitations**

The results of this study can only be generalized to courses where institutional context, technology used, students' attributes, and lecturer competency skills are compatible. Since WSU is a multi-campus institution, resources in different campuses are not evenly distributed and consequently are not the same. Additionally, lecturers' pedagogies are not standardized. That means large-class and flipped learning challenges and coping strategies may not necessarily be the same. The gathered data also depends on the level of understanding of the participants at the time of data collection. Perhaps if the same study could be repeated in future with the same methodology and at the same campus the results could be different, because the lecturer will presumably have acquired more experience and possibly personal development on how to manage large-classes or effectively use the flipped learning approach; or new facilities are purchased or a different cohort of students is admitted. So, the results of the study will mainly reflect the field in which data were collected at the time of gathering, and are likely to be different from time to time.

### **3.10 Conclusion**

In this chapter I discussed the research paradigm, the mixed method research approach, the use of phenomenology as a qualitative research design to produce data, selecting the sample, credibility of the study, ethical considerations, and limitations of the study. The following chapter presents the quantitative and qualitative findings that emerged from the questionnaire, document analysis and focus group discussion.

## Chapter 4

### **4. *Data presentation and analysis***

#### **4.1 Introduction**

In the previous chapter the research methodology and design was discussed. This chapter presents the findings from both the quantitative and the qualitative data collection strategies. A survey questionnaire was the instrument that was used to collect the quantitative data while document analysis and a focus group discussion served as data production strategies for the qualitative aspect of the study. As mentioned in previous chapters the objectives of the study were as follows:

1. To discuss the pedagogical underpinnings of a flipped classroom approach used in a large Business Information Systems (BIS) class at WSU.
2. To understand the student's experiences of learning BIS through a flipped classroom approach in a large class at WSU.
3. To understand why the students experienced learning BIS through a flipped classroom approach in a large class at WSU in the way that they did.

The findings from the document analysis which was done to describe and discuss the pedagogical underpinnings of the flipped classroom approach will be presented first, this is followed by the presentation of findings from the questionnaire and finally the findings from the data produced from the focus group discussion will be presented.

#### **4.2 The pedagogical underpinnings of the flipped classroom approach**

The following documents were analysed to respond to objective 1 of the study: contact timetable, prescribed textbook, course outline, lesson plan, assessment tasks, attendance registers and mark sheets. These documents influenced how the flipped classroom approach was executed which in turn impacted on how the students experienced learning BIS in the large class context. The critical documents on which the pedagogy was based were the course outline, the prescribed textbook, and the assessment tasks.

##### **4.2.1 Contact Timetable for the BIS Module**

The BIS10B1/EBIS1B1 theory classes were conducted three times a week on Mondays, Wednesdays, and Fridays for ninety minutes each day (see Appendix F – Timetable). Three

lecture venues were used, the auditorium, AT09, and AG17. Appendix F shows that students attended in the auditorium twice a week. The auditorium was the preferable venue for the module for several reasons. It had an adequate number of desks and chairs for a class of two hundred students. It was large enough to accommodate more than three hundred students. It was air-conditioned and best suited for large classes considering the arrangement of the desks and chairs. It had a mounted data projector, built-in speakers, a microphone, and a fixed desktop for plug and play presentations. However, students could not use it thrice a week as Songca (2014, p. 33) points out there is “*shortage of teaching venues, especially for large classes*”, so large groups needed to share the available venues.

The other two venues, AT09 and AG17 were smaller and became overcrowded when the majority of BIS10B1/EBIS1B1 students attended a lecture. AT09 and AG17 could accommodate a maximum of one hundred students each. Despite not having one hundred percent attendance on any given day, these venues were often overcrowded. Further they lacked the modern features found in the auditorium as discussed earlier. AG17 was the smallest of the three venues. I observed during lectures that students often stood in the other venues. It is my resolve that this kind of discomfort that the students experienced influenced the way learning took place.

Pope (2016) declares that the contact timetable influences students’ understanding and participation in learning activities, asserting that “*productivity is higher in the morning than the afternoon and that this variation in productivity can be exploited to increase efficiency...*” (p. 10). This statement suggests that lecturers should conduct their classes in the morning when students are likely to be productive. Nevertheless, the influence of modifications in teachers’ teaching quality and students’ learning ability due to energy levels throughout the day or differences in morning and afternoon class attendance were identified as uncontrollable variables that could make the claim invalid in some cases. Another consideration is that the study was conducted in a mathematics class and it may not be accurate to generalise it to other courses. “*Despite these shortcomings, the results tend to show that students are more productive earlier in the school day...*” (Pope, 2016, p. 10). The timetable, attached as Appendix F shows that BIS classes were conducted at 08:00 on Fridays, 9:30 on Mondays and 11:15 on Wednesdays. Martins and Walker (2006, p. 12) declare that “*Mondays and Fridays and early mornings (up to 10.00) and late afternoons (from 16.00) typically display poorer attendance levels*” in higher education institutions. Martins and Walker’s (2006) and Pope’s (2016) arguments above justify why BIS students’

attendance tended to be poor on Mondays and Fridays and why attendance on Wednesday tended to be better. The analysis of the contact timetable showed the times and days in which lectures were undertaken and how the timetable influenced the students' learning experiences. The flipped classroom pedagogy was effective on Wednesdays when classes were conducted at midday in the auditorium based on the number of students attending classes. This finding suggests that the flipped classroom approach was more effective on the other days of the week than it was on Mondays and Fridays; and that the venue used for lectures needs to be large enough and well equipped with learning resources for the flipped classroom approach to be more effective.

#### **4.2.2 Prescribed textbook for BIS**

Richards (2001) argues that textbooks are essential for any learning program. The use of textbooks has its advantages and disadvantages and requires extensive discussions by faculty to identify and recommend suitable texts. Textbooks are written or updated and published almost every year. BIS lecturers usually meet towards the end of the second semester every year to decide on the prescribed book they would use in the following year. Lecturers come to the meeting with the desk copies from the publishers of the books they propose to prescribe for the course. They compare the desk copies with the latest edition of the already prescribed book using the agreed criteria.

Based on last year's criteria that was used to select the appropriate textbook, the prescribed textbook as indicated in the course outline in Appendix A was approved because the lecturers believed it met the criteria they prescribed in 2009. The criteria used for the selection of the textbook is evidenced in the following extract from the minutes of subject lecturers' last meeting that was held in Butterworth on the 08<sup>th</sup> of October 2015.

*The BIS lecturers agreed in 2009 when BIS was first introduced to adopt a textbook that is of accepted standard by meeting the criteria listed below: 1. the textbook is written in simple language that our students can understand. 2. The prescribed textbook defines and explains the IT terms satisfactorily to the subject lecturers' judgement. 3. The textbook is well-structured with appropriate font and style, accompanied by supporting case studies and graphics. 4. The textbook has accompanying website where additional teaching resources can be downloaded. 5. The textbook chapters cover relevant content that can be completed in a semester. 6. Lecturers will review the prescribed book periodically, preferably annually to maintain its relevance to the course. 7. Subject lecturers agree to use these criteria to evaluate*

*any prospective prescribed textbook, and reserve the right to amend the criteria as they deem it necessary.*

Lecturers selected the current prescribed textbook because they believed that it met the criteria stated above. That is, they believed that the book was simple and straightforward for students to understand. It articulated the ICT terms or concepts in a simple language. The structure of the book made it easy to scan what was important in a particular paragraph or page through appropriate formatting like underline, bold and italic. Keywords were highlighted and defined satisfactorily and where applicable, examples were given in relevant contexts. The graphics and pictures used in the book made it easy for the reader to understand the text. Additionally, each chapter ended with a summary and review questions for students to test their knowledge. The contents were appropriate to be covered in a semester. There were no identified limitations at the time of selecting the prescribed book.

However, as Richards (2001) had indicated that textbooks are not perfect, I realised at the time of lecturing that some of the examples and case studies were not relevant in the South African context. Subsequently, I had to make minor alterations when teaching by making my own examples or translate the case studies into the South African context. For example, America Online (AOL) was given as the popular Internet service provider in the textbook, whereas in South Africa the popular Internet service providers are MTN, Vodacom, Cell C and Telkom.

The analysis of the BIS textbook demonstrated the importance of supplementing the prescribed textbook with other materials, especially, the online materials that were considered as the viable alternative because of the ease of access and their relevance to the learning outcomes.

### **4.2.3 Course outline**

The course outline was the critical document for the course; it detailed the contents of the curriculum. The course outline used in BIS is attached as Appendix A in this dissertation. Subject lecturers attended a workshop on preparing a course outline in 2014. They used the workshop material and template to compile the BIS course outline following the guidelines in the workshop template. The outline recorded the important dates that would assist students in planning their semester activities. Assessment dates and the assessment methods were stated well in advance and were adhered to in most cases in the duration of the semester. The course outline detailed what was to be assessed, when and how. The syllabus had been kept the same

for several years without making major changes, except for adding new features as they became available in the latest textbooks. It had been possible to complete the syllabus in the scheduled time during the past years including the last semester, when the study was undertaken.

As evidenced in Appendix A, the course outline does not contain a section detailing the teaching strategies that should be adopted for the course. This could be considered as a limitation because the pedagogy used to teach the course is open to individual lecturers' judgement and interpretations. They can use any teaching approach on the assumption that their teaching approach meets the intended learning outcomes. In this study the flipped classroom approach was used despite it not being stipulated on the course outline. The assessment criteria were also not predefined at the lecturers' meeting during which the outline was designed. As a result, there was no standardisation of assessments across the multiple campuses where BIS was offered. This indicates a lack of uniformity in the pedagogical delivery and assessments of BIS.

The analysis of the course outline demonstrated that the current course outline met the standards introduced in the workshop. The lack of prescribed pedagogy and standardisation of assessments across multiple campuses where BIS was offered were identified as the limitations of the course outline. The uniformity of assessment of courses offered in multiple campuses was always emphasised in departmental meetings and often enforced in final examinations only. The course outline will need to be improved to provide uniformity in other summative assessment tasks carried out during the semester as well. However, it may be argued that not prescribing a pedagogy and assessment in the course outline enables lecturers to apply their innovation into improving students' learning experiences. The course outline was flexible to accommodate different pedagogies and assessment practices for the improvement of students' learning experiences.

#### **4.2.4 Lesson Plan**

The lesson plan was prepared for the lecturer's use only. All lesson plans were compiled in the same way as the sample lesson plan attached as Appendix C. The lesson plan assisted the lecturer to focus on what was important in each lecture. Students' activities were compiled with reference from the lesson plans and students were consistently reminded of the following link where the lecture videos were uploaded, <http://www.tes.com/lessons/GZ0qPBy3hQqOGw/information-systems-in-an-organization>.

Appendix C shows that each lesson plan showed the learning objectives and the duration of the lesson. It also showed the types of activities required to achieve the stated learning outcomes to respond to the stated objectives.

The lesson plans enabled the lecturer to ensure the alignment of pedagogy, activities and assessment with learning outcomes during the planning stages of lectures.

#### **4.2.5 Assessment tasks**

Consider the example below of how scaffolding from pre-class activity to in-class discussion was used. This was a formative assessment task that aimed at determining students' understanding of the presented topic.

##### **4.2.5.1 An example of the assessment task**

***Topic: Transaction Processing Systems (TPS)***

*Learning objectives:*

*To learn the difference between a manual and an automated TPS*

*Learning outcome*

*To demonstrate understanding of the difference between manual and automated TPS*

***Pre- class Activity:***

*1. Go to the blend space:*

<https://www.tes.com/lessons/GZ0qPBy3hQqOGw/information-systems-in-an-organization>

*2. Watch video number 5 taking note of a discussion that addresses the questions listed below.*

*3. Answer the following questions:*

- a) What is a cash register?*
- b) Why is it used?*
- c) What is a transaction processing system?*
- d) Why is it used?*
- e) What is a square?*
- f) What is it used for?*
- g) Compare a cash register with an automated TPS*

### ***In-class activity***

*ABC trading store experiences a stock management problem following an observed pattern of increased sales every month. The major challenge they face is that the manager places orders late and often notices when an order is placed that they are out of stock because she is a busy person. As a newly employed graduate you observe that they rely on a cash register and other manual systems to conduct stocktaking. The manager trusts your views and requests you to advise her on what to do*

- a) *Think about a TPS as a possible solution to this problem. How can it solve this problem? (Hint: Refer to your textbook and the pre-class activity you have completed)*
- b) *Share your ideas with a friend (classmate)*
- c) *In pairs, prepare a comprehensive presentation to explain how a TPS could be a solution to this problem?*
- d) *Present your solution to the class*

*(The lecturer selects any pair to lead the discussion and the rest of the class becomes part of the discussion by adding missed points, asking questions, answering questions or correcting incorrectly presented information. The lecturer drives the discussion towards achieving the lecture outcomes, and wraps up the lecture by emphasising key points in the discussion)*

*Different groups will come with different views how the TPS could be a solution to the problem*

*Possible answers: automated screen alerts, stock re-order levels and automated email order lists*

Formative assessment was used throughout the duration of the semester, although it was limited when the traditional lecture method was used. The lesson objectives were given in advance and students were given a clear direction on what to look for when watching videos, and they were given formative assessments to test their understanding of the introduced concepts before they attended the lecture. In addition to the assessment tasks that students had to complete after watching the videos, case studies and relevant questions were given in class to engage students further with the concepts introduced in videos. One of the common approaches used frequently in classes was the think-pair-share approach. The summative assessment tasks assessed students' competency levels at attaining the course outcomes for

both the mini-test and the presentations (see Appendix G – Assessment criteria for group work assessment). The mini tests were made up of true or false questions that never formed part of the final examination. Even the assignments and the presentations were conducted in groups while the final examination was in a written form.

The analysis of the assessment tasks showed that the pre-class activities that students were required to do and the activities students engaged with during lectures were constructively aligned with the learning outcomes. Students were facilitated to apply the knowledge acquired from the pre-class activities to solve real-life problems during the class time.

*If the students gained basic knowledge outside of class, then they need to spend class time to promote deeper learning. Again, the activity will depend on the learning goals of the class and the culture of the discipline... In other contexts, students may spend time in class engaged in debates, data analysis, or synthesis activities. The key is that students are using class time to deepen their understanding and increase their skills at using their new knowledge (Brame, 2013, p. 4).*

The use of think-pair-share in assessment tasks enabled students to relate theory to practical thereby applying higher order thinking skills. Yuretich (2002, p. 8) argues that “[when] students really [think about] a question, discuss it in groups, or explain their answers to others, they are more likely to use skills at the more advanced levels of Bloom’s Taxonomy”. The revised Bloom’s taxonomy is “a framework for classifying statements of what we expect or intend students to learn as a result of instruction” (Krathwohl, 2002, p. 213).

#### **4.2.5.2 Blooms’ taxonomy table showing students’ learning competencies**

Table 1 below depicts the types of learning behaviours that are classified hierarchically from the Bloom’s Taxonomy.

*4.2.5.2.1 Table 1 Bloom's taxonomy of learning levels and skills demonstrated at each level (Source: Yuretich, 2002, p. 2)*

<b>Competence</b>	<b>Skills Demonstrated</b>
<b>Knowledge (Information)</b>	list, define, tell, describe, identify, show, label, collect, examine, tabulate, quote, name, who, when, where, etc.
<b>Comprehension</b>	summarize, describe, interpret, contrast, predict, associate, distinguish, estimate, differentiate, discuss, extend
<b>Application</b>	apply, demonstrate, calculate, complete, illustrate, show, solve,

	examine, modify, relate, change, classify, experiment, discover
<b>Analysis</b>	analyse, separate, order, explain, connect, classify, arrange, divide, compare, select, explain, infer
<b>Synthesis</b>	combine, integrate, modify, rearrange, substitute, plan, create, design, invent, what if?, compose, formulate, prepare, generalize, rewrite
<b>Evaluation</b>	assess, decide, rank, grade, test, measure, recommend, convince, select, judge, explain, discriminate, support, conclude, compare, summarize

Bloom's taxonomy identifies students' competencies as knowledge, comprehension, application, analysis, synthesis and evaluation. Knowledge and comprehension are regarded as lower order skills while the rest are considered as higher order skills. However, it is impossible for students to acquire higher orders skills without attaining the lower order skills (Yuretich, 2002). Yuretich (2002, p. 2) argues that

*lectures tend to focus on the first (information) and second (comprehension) levels, which are relatively easy to attain in this mode. Assessment of the students' abilities at these cognitive levels can be achieved easily through traditional examinations. If the instructional goals include learning at higher levels, which encompass the generic term of "critical thinking," then assessment methods need to be aligned with these goals.*

The verbs used in assessment tasks as indicated in the example above (see section 4.2.5.1 on page 49) were more inclined to the application and analysis stages of the Bloom's taxonomy.

#### **4.2.6 Attendance registers**

Students signed the attendance registers in every contact session that we had. Figure 4 below shows the summary of students' attendance throughout the semester.

##### **4.2.6.1 The outline of students' attendance in the duration of the course**

Figure 4 below illustrates the students' attendance patterns during the course.

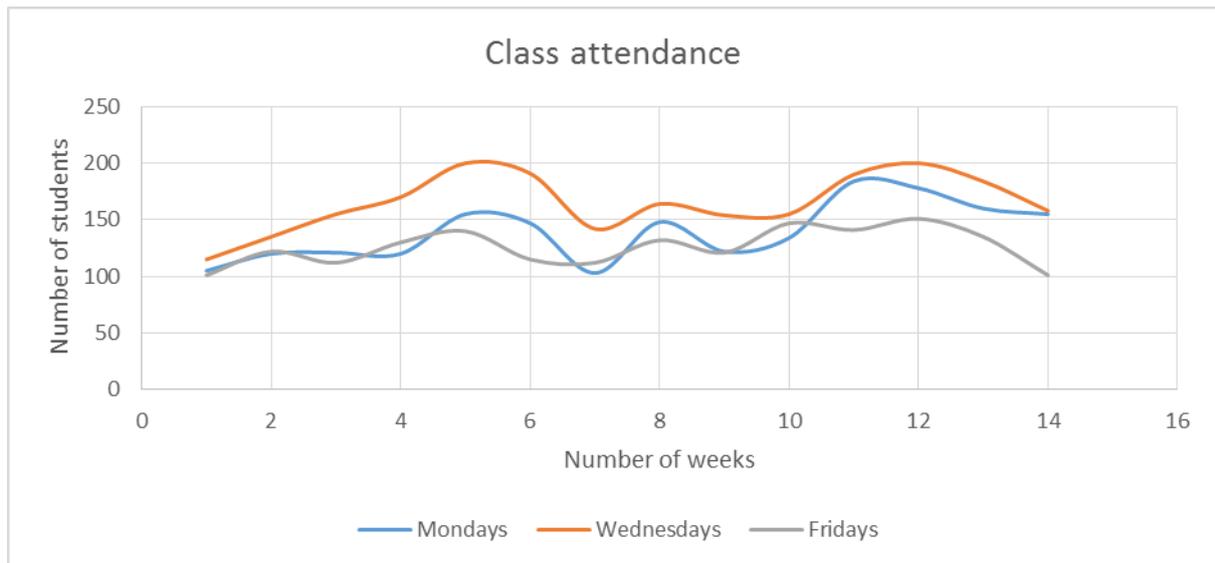


Figure 4 Students' attendance patterns in the duration of the course

The analysis of the attendance registers revealed that students attended classes more frequently on Wednesdays than they attended on Mondays and Fridays. One hundred percent attendance was observed on two occurrences (week 5 and week 12) when summative tests were written. Some factors that could contribute to the varying pattern of attendance may be the venues used on different days. As discussed earlier (section 4.2.1, page 44) there were three venues in which lectures were held. The resources available and the size of the different venues could have influenced the students' attendance. My observation with regard to attendance has been that students attended in large numbers when they were due to revise for a summative assessment or exam, when they were to write a summative assessment task, and when they were due to collect summative assessment scripts. Many students gave priority to assessments than they did to lectures. The activities conducted on a particular day could have influenced students' attendance. This finding confirms Martins and Walker's (2006) assertion that attendance is often poor on Mondays and Fridays in higher education institutions compared to other days of the week.

#### 4.2.7 Mark sheet of students' performances

Figure 5 below depicts the summary of students' performances as recorded in the mark sheet.

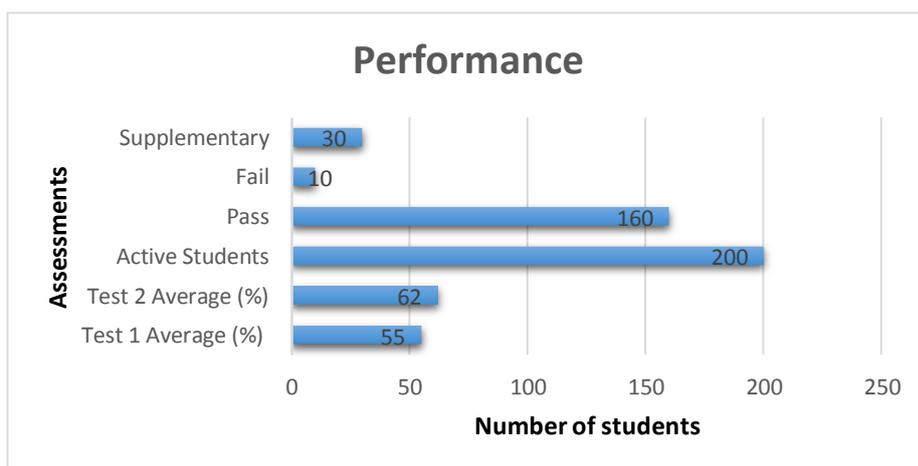


Figure 5 Students' performances as recorded in the mark sheet

The BIS syllabus consisted of five chapters. Chapter 1 and chapter 2 were taught using the traditional lecture method. The flipped classroom method was introduced in chapters 3, 4 and 5. Two summative assessments were conducted and students' performances were recorded in the mark sheet. The first summative assessment was conducted on completion of chapters 1 and 2, and the second one was conducted on completion of chapters 3, 4 and 5. The same assessment tasks were applied in both assessments. Students wrote mini tests with multiple-choice questions and true or false questions, and made oral presentations of the submitted assignments. All students' summative assessment marks including examination marks were documented in the mark sheet. The analysis of marks recorded in the mark sheet revealed that the class average mark of test 2 (62%) was higher than the average mark of test 1 (55%). This suggests that the flipped classroom approach resulted in students improving their performances by 7% when comparing students' performances on test 1 and test 2. All students scored at minimum 40% average mark (Duly Performance) that enabled them to qualify to write the final examination. After writing the final examination, 160 out of 200 (80%) students passed the examination, 30 out of 200 (15%) students qualified to write a supplementary exam, and 10 out of 200 (5%) students failed the examination.

The analysis of students' performances revealed that students' scores improved when the flipped classroom approach was used. This finding suggests that the flipped classroom approach may have influenced students' understanding of the course content and therefore improved their performance in the summative assessments.

This brings us to the end of document analysis. We now proceed to students' responses to the survey questionnaire.

### 4.3 The students' experiences of learning BIS through a flipped classroom teaching method in a large class at WSU

The findings of the survey questionnaire presented below were in response to research objective 2 of the study. The data represents the demographics of the participants as well as their experiences of the flipped classroom approach based on the responses from the questionnaire (quantitative data) and the focus group discussion (qualitative data).

#### 4.3.1 Demographics of students in the BIS class

##### 4.3.1.1 Students' Gender

Figure 6 below shows the gender of the participants.

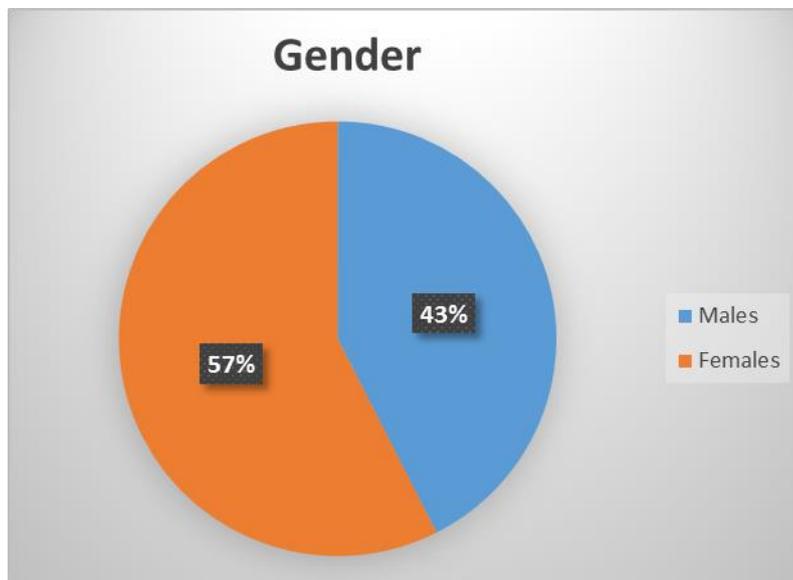


Figure 6 Gender

Figure 6 depicts the majority of the participants, 77 out of 134 (57%), were females and the remaining 57 (43%) were males.

##### 4.3.1.2 Students' Age

Figure 7 below depicts the age categories of the participants.

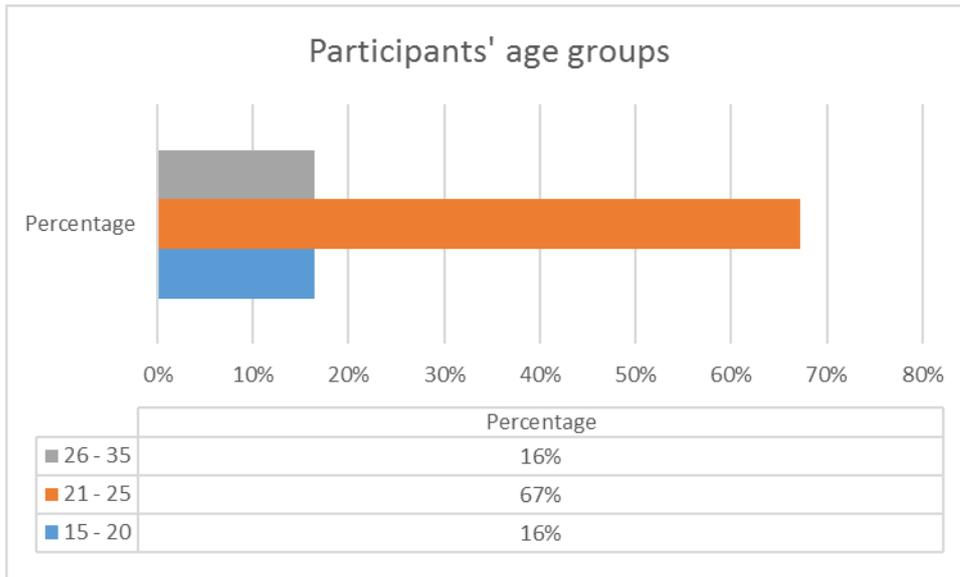


Figure 7 Age

Figure 7 illustrates that out of 134 participants, 16% were between 26 years and 35 years; 67% were between 21 years and 25 years, and the remaining 16% were between 15 years and 20 years.

#### 4.3.1.3 Offering type of Business Information Systems

Figure 8 below illustrates the divisions of offering Business Information Systems at WSU.

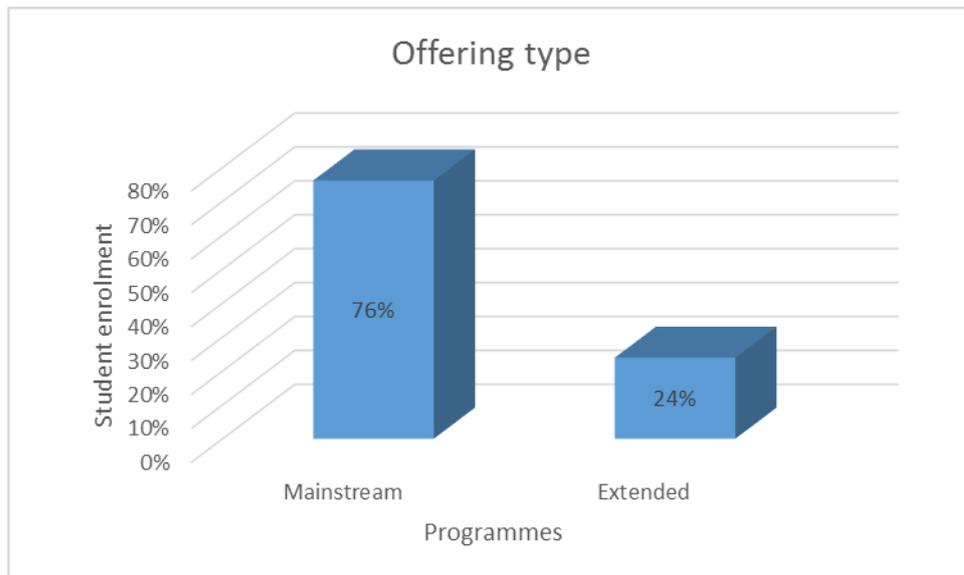


Figure 8 Offering Type

Figure 8 shows that out of 134 participants, 102 (76%) participants were students who were registered in the mainstream programme (BIS10B1) and 32 (24%) were students who were registered in the extended programme.

### 4.3.2 Students' experiences of learning BIS through a flipped classroom pedagogy

This section of the dissertation reflects both quantitative and qualitative data using a sequential quantitative-qualitative analysis for data collection and analysis, meaning that the quantitative data elicited from the questionnaire are presented and analysed first followed by the qualitative data produced through the focus group discussion.

#### 4.3.2.1 Questionnaire data

##### 4.3.2.1.1 Experiences of the flipped classroom approach to learning and motivation for class attendance

Figure 9 below represents students' responses to the first five questions of the questionnaire that pertained to their approach to learning and motivation to attend classes.

##### 4.3.2.1.1 Approach to learning and motivation to attend classes

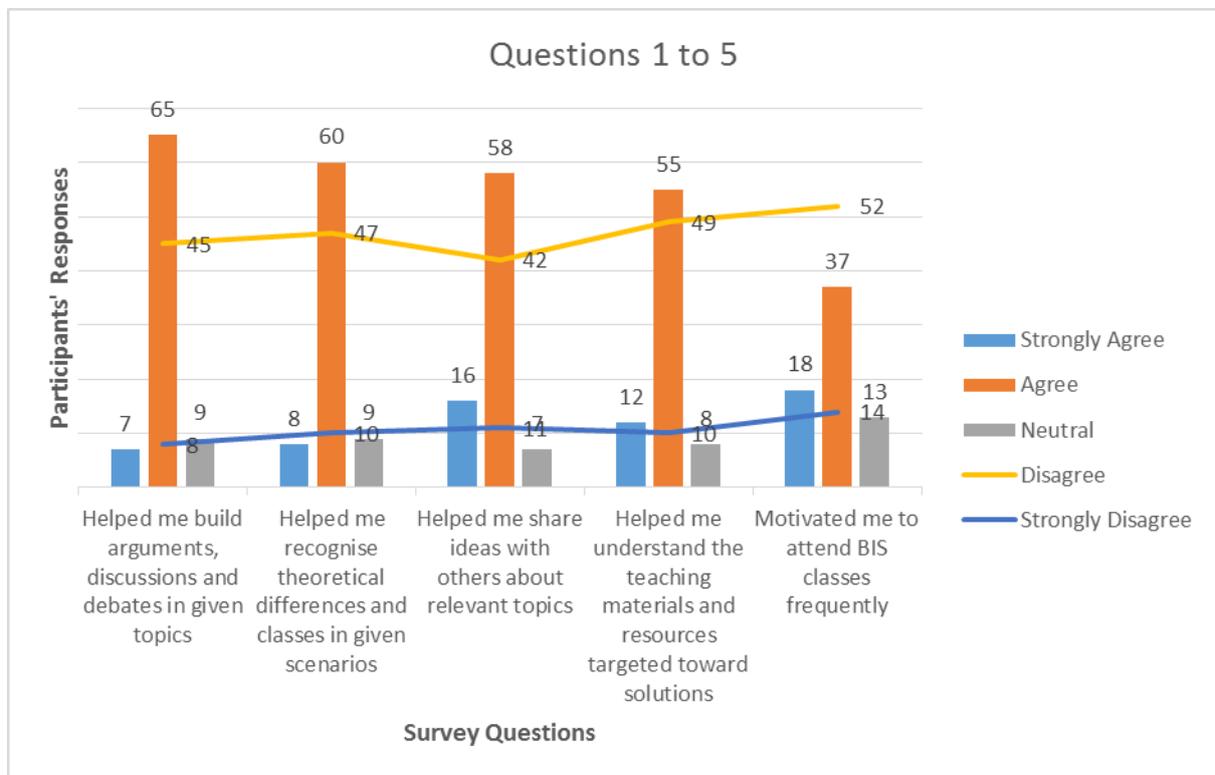


Figure 9 Approaches to learning and motivation to attend classes

Figure 9 shows that 54% of participants agreed that the flipped classroom approach helped them in building arguments, discussions and debates in given topics. 5% of the 54% strongly agreed, 40% of participants disagreed with 6% strongly disagreeing, and the remaining 7% were neutral. This implies that the majority of participants agreed that the flipped classroom approach helped them in building arguments, discussions and debates in given topics.

51% of the participants agreed that the flipped classroom approach helped them recognise the theoretical differences and clashes in the given scenarios with 6% strongly agreeing. 43% of the participants disagreed with 8% strongly disagreeing. 7% of participants neither agreed nor disagreed. This implies that the majority of participants agreed that the flipped classroom approach helped them recognise the theoretical differences and clashes in the given scenarios.

55% of participants agreed that the flipped classroom approach helped them share ideas with others about relevant topics with 12% strongly agreeing. 40% of the participants disagreed with 8% strongly disagreeing. 5% of the participants neither agreed nor disagreed. This means that the majority of participants agreed that the flipped classroom approach helped them share ideas with others about relevant topics.

50% of participants agreed that the flipped classroom approach helped them understand the teaching materials and resources targeted toward solutions with 9% strongly agreeing. 44% of the participants disagreed with 8% strongly disagreeing. 6% neither agreed nor disagreed. This means that the majority of participants agreed that the flipped classroom approach helped them understand the teaching materials and resources targeted toward solutions.

41% of the participants agreed that the flipped classroom approach motivated them to attend the BIS class regularly with 13% of participants strongly agreeing. 49% of participants disagreed with 10% strongly disagreeing. 10% of the participants neither agreed nor disagreed. This implies that the majority of the participants disagreed that the flipped classroom approach motivated them to attend the BIS class regularly.

To summarise, the majority of participants generally agreed with the questions regarding the improved influence to adopt a deep approach to learning through class discussions and interactions with course materials. However, they disagreed with the fifth question regarding class attendance. The reasons for this will be articulated in the next chapter that deals with reasons why students experienced this pedagogy in the way that they did.

### 4.3.2.1.2 Experiences of the flipped classroom approach in relation to academic development and engagement in class activities

Figure 10 below illustrates students' responses to questions regarding their academic development and engagement in class activities.

#### 4.3.2.1.2.1 Academic development and engagement in activities

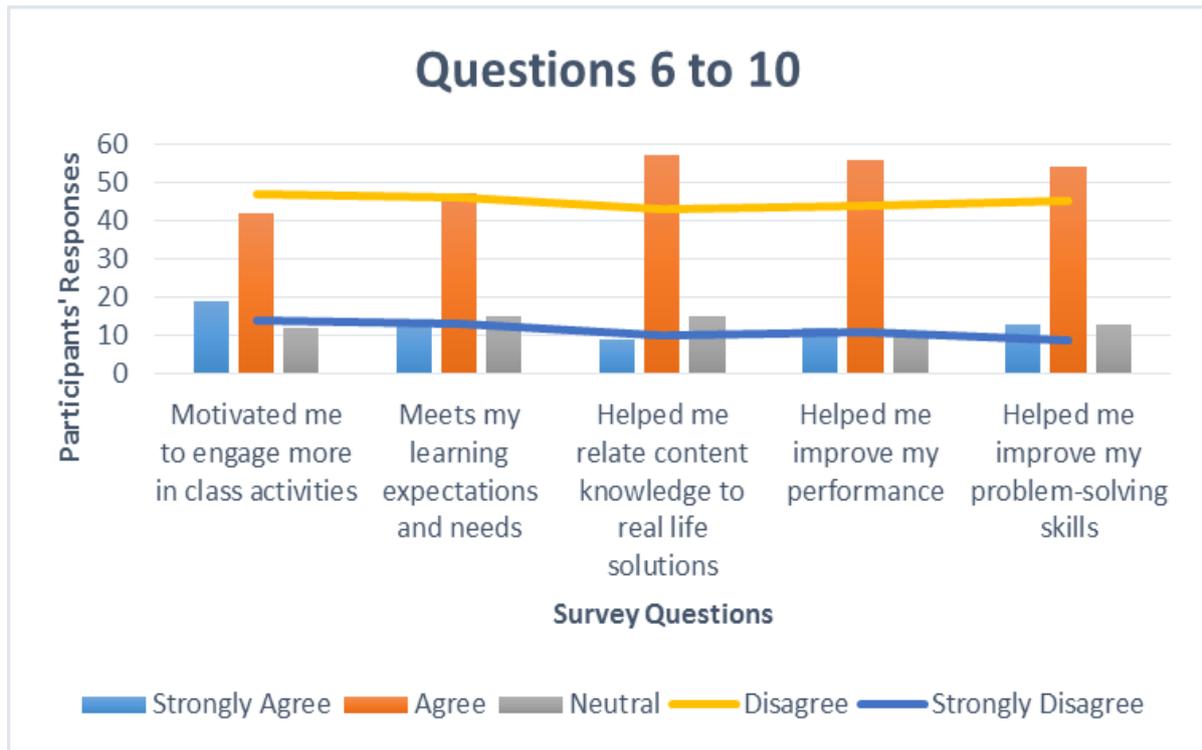


Figure 10 Academic development and engagement in activities through a flipped classroom pedagogy

Figure 10 shows that 42% of the participants agreed that the flipped classroom approach motivated them to engage more in class activities with 14% of the participants strongly agreeing. 47% of the participants disagreed with 11% strongly disagreeing. 11% neither agreed nor disagreed. This implies that the majority of the participants disagreed that the flipped classroom approach motivated them to engage more in class activities.

43% of the participants agreed that the flipped classroom approach met their learning expectations and needs with 10% of the participants strongly agreeing. 46% of the participants disagreed with 11% strongly disagreeing. 11% of the participants neither agreed nor disagreed. This means that the majority of the participants disagreed that the flipped classroom approach met their learning expectations and needs.

49% of the participants agreed that the flipped classroom approach helped them relate content knowledge to real-life situations with 7% of the participants strongly agreeing. 40% of the participants disagreed with 8% of the participants strongly disagreeing. 11% of the participants neither agreed nor disagreed. This means that the majority of the participants agreed that the flipped classroom approach helped them relate content knowledge to real-life situations.

50% of the participants agreed that the flipped classroom approach helped them improve their performances, with 9% strongly agreeing. 44% of the participants disagreed with 9% strongly disagreeing. 8% of the participants neither agreed nor disagreed. This means that the majority of the participants agreed that the flipped classroom approach helped them improve their performances.

50% of the participants agreed that the flipped classroom approach helped them improve their problem-solving skills, with 10% of the participants strongly agreeing. 40% of the participants disagreed with 7% strongly disagreeing. 10% neither agreed nor disagreed. This implies that the majority of the participants agreed that the flipped classroom approach helped them improve their problem-solving skills.

In summary, Figure 10 represents students' responses to the questions of the questionnaire that pertained to their academic development and engagement in class activities. The majority of participants generally disagreed with the question regarding the improved motivation to engage in class activities. In addition, they disagreed that the flipped classroom approach met their expectations. However, they agreed with the questions regarding their academic development. The reasons for this will also be articulated in the next chapter that deals with reasons why students experienced this pedagogy in the way that they did. The next section presents students' responses to questions related to their development of critical Crossfield outcomes and computer literacy skills.

#### **4.3.2.1.3 Experiences of the flipped classroom approach in preparation for critical Crossfield outcomes and computer literacy skills**

Figure 11 below depicts the influences of the flipped classroom approach in students achieving the critical crossfield outcomes and computer literacy skills.

#### 4.3.2.1.3.1 Critical Crossfield outcomes and computer literacy skills

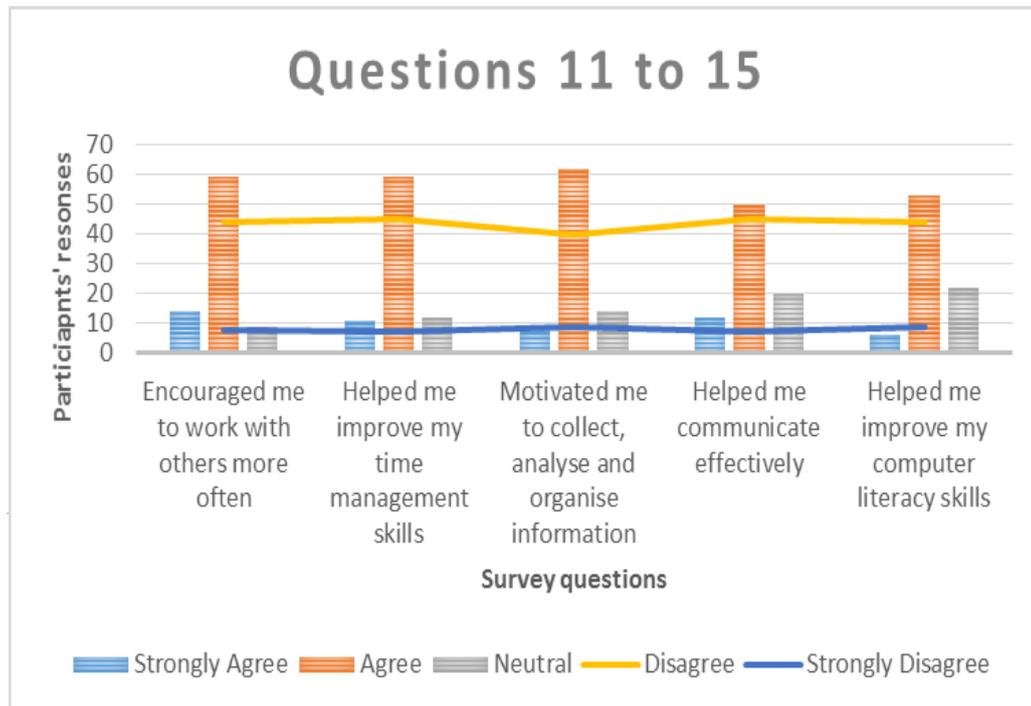


Figure 11 shows that 54% of the participants agreed that the flipped classroom approach encouraged them to work with others more often, with 10% strongly agreeing. 39% of the participants disagreed with 6% strongly disagreeing. 7% of the participants neither agreed nor disagreed. The majority of the participants agreed that the flipped classroom approach encouraged them to work with others more often.

51% of the participants agreed that the flipped classroom approach helped them improve their management skills with 8% of the participants strongly agreeing. 40% of the participants disagreed with 7% strongly disagreeing. 9% of the participants neither agreed nor disagreed. The majority of the participants agreed that the flipped classroom approach helped them improve their management skills.

53% of the participants agreed that the flipped classroom approach motivated them to collect, analyse, and organise information with 7% strongly agreeing. 37% of the participants disagreed with 7% strongly disagreeing. 10% of the participants neither agreed nor disagreed. The majority of the participants agreed that the flipped classroom approach motivated them to collect, analyse, and organise information,

46% of the participants agreed that the flipped classroom approach helped them communicate effectively with 9% strongly agreeing. 39% of the participants disagreed with 5% of the

participants strongly disagreeing. 15% of the participants neither agreed nor disagreed. This means that the majority of the participants agreed that the flipped classroom approach helped them communicate effectively.

43% of the participants agreed that the flipped classroom approach helped them improve their computer literacy skills with 5% strongly agreeing. 40% of the participants disagreed with 8% strongly disagreeing. 16% of the participants neither agreed nor disagreed. This implies that the majority of the participants agreed that the flipped classroom approach helped them improve their computer literacy skills.

In summary, Figure 11 represents students' responses to the questions of the questionnaire that related to their experiences of the flipped classroom approach in assisting them in the development of critical Crossfield outcomes and computer literacy skills. The majority of participants generally agreed that the flipped classroom approach helped them develop the critical Crossfield outcomes envisioned in the course outline and that their computer literacy skills had improved as the result of the adoption of the flipped learning approach.

This brings us to the end of survey questionnaire data. The findings from the focus group data are presented below.

#### **4.3.2.2 Focus group discussion: Qualitative data**

The purpose of the focus group discussion was to acquire a comprehensive understanding of students' experiences of learning BIS through the flipped classroom approach in a large class setting. The focus group discussion was conducted with eleven participants as indicated earlier in section 3.4 on page 37. The six categories of the CABLS framework that informed the emergent themes of the qualitative data are depicted in the diagram below.

#### 4.3.2.2.1 The Main categories of the Complex Adaptive Blended Learning Systems framework

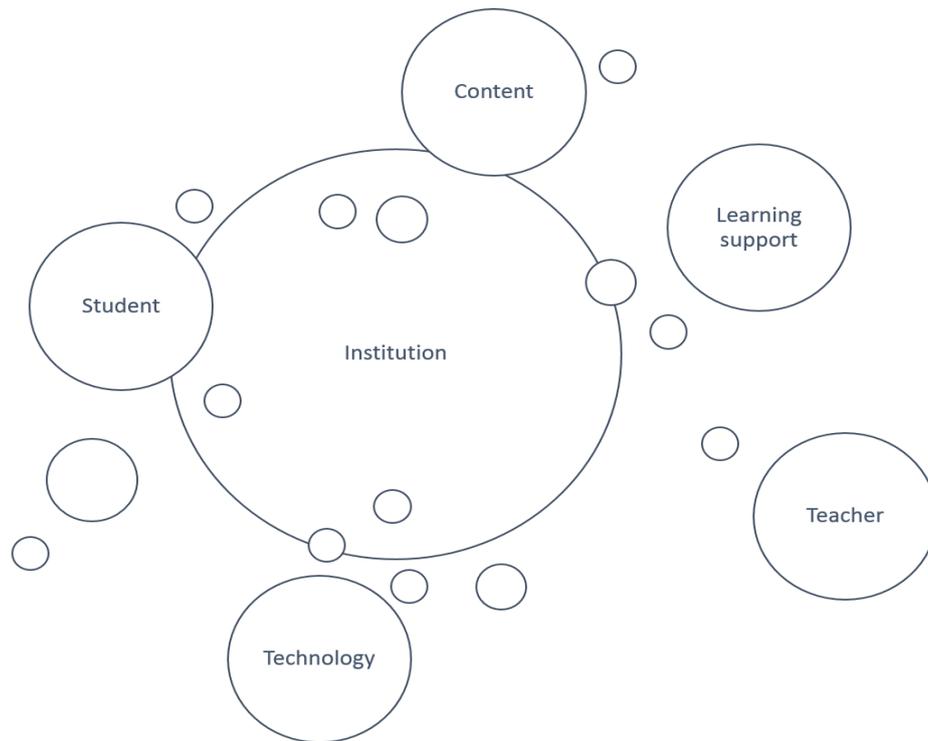


Figure 12 Six categories of the CABLS framework

Figure 12 above shows the six categories of the CABLS framework that will be used below to categorise the qualitative data that was produced through the focus group discussion. Due to the interrelated nature of some of the categories they will be discussed together, for example, the institution and learning support categories are discussed together because of their close associations in the data. The emergent themes are discussed as the sub-categories of the CABLS framework's main categories.

##### 4.3.2.2.1.1 Category 1 – Teacher

In this category students' experiences and perceptions of the lecturer are discussed based on the themes that emerged from the focus group discussion data. The emergent theme in this category is the students' experiences of lecturer support.

##### 4.3.2.2.1.1.1 Experiences of lecturer support

Students' emotions differed when the flipped classroom approach was introduced. Regardless of the way they felt about it, they attributed their feelings to the lecturer. Some participants, in fact most of them, verbalised that they were unhappy and anxious when the flipped classroom approach was introduced at first. They found it challenging and demanding, and

thus developed a negative attitude towards it. They complained about the prerequisite of having to learn new concepts on their own before class. The pedagogy influenced students' perceptions of the lecturer. Some believed that *"the lecturer was lazy and did not want to work"* (Participant 3). Participant 6 shared the same sentiment echoing that, *"I said to my friends and I say it again. To me the lecturer was lazy. He did not do his work. He did not teach us..."* (Participant 6).

The levels of anxiety experienced by the participants differed. Some were anxious to the extent of abandoning classes. This was observed in participant 8's comment who said, *"I don't want to lie. I was not happy when this new way of teaching BIS came along. I was stressed and felt that this was too much and started to skip classes..."* (Participant 8). Participant 5 shared the same sentiment, asserting that, *"I did not do well in BIS. I stopped attending his classes, long time ago..."* (Participant 5). It is not only participants 5 and 8 who abandoned classes, Participant 9 shared a similar comment, although it is at a varying degree. She exclaimed:

*"To me it was not easy to accept this way of learning. Because of that I started late to attend BIS classes. I did not accept this way of learning at all. I did not attend all lectures. Sometimes because I did not want to present or to be part of the discussion. I think I should not be forced to do something I don't want to do. You [the lecturer] forced us to do things we did not want to do"* (Participant 9).

Participant 2 said *"Some of us who were skipping classes were blaming the lecturer for not caring... We said, if this was a good way of teaching every lecturer would use it... We now blame ourselves for realising late the importance of attending BIS lectures"* (Participant 2).

Although participants 2, 8 and 9 were unhappy in BIS classes, they had the courage to attend some classes although they did skip a few; unlike participant 5 who decided to abandon all her classes. Participant 2 showed his regret of realising the importance of attending lectures too late.

Some students had contrary views about the lecturer's support. In actual fact, they commended the lecturer for introducing the flipped learning approach. Participant 4 attests to this statement, exclaiming the following:

*I started becoming serious when I saw that the lecturer will not change his teaching style. Otherwise I did not accept it because it is not the same as the way I am used to be taught. I thought the lecturer was taking us for a ride... I learnt*

*later that he was helping us... I thank [the lecturer] for coming with this flipped classroom thing. It was a creative way of making us work more. I understand BIS better now. I think the lecturer was helping us. Whenever I did not understand something, I went to his office and he explained it to me. I did not fear to go to him whenever I wanted clarity in something. He helped me to understand whatever question I had (Participant 4).*

Participant 4 regarded the lecturer as a supportive person. Participant 7 and Participant 11 expressed similar views as shown below:

*“I enjoyed learning the three chapters taught in this way. I understand them better than the first ones. I can tell you everything about BIS now. The lecturer was helpful. He managed to overcome all the barriers. I understand BIS better now. I enjoyed every lecture...” (Participant 7).*

Similarly, Participant 11 said, *“I would go to the lecturer’s office every time I had a problem with my studies and he helped a lot. It’s true... his office was always open for us students” (Participant 11).*

Although participants 2, 3, 5, 6, 8 and 9 believed that the lecturer was not supportive enough in their studies, participants 4, 7 and 11 had contradicting views believing that the lecturer was supportive throughout the learning process. Students’ perceptions about the lecturer support varied from student to student. We now turn to a discussion of institutional infrastructure and learning support.

The following categories explain the students’ experiences related to institutional infrastructure and learning support.

#### **4.3.2.2.1.2 Category 2 – The Institution and Category 3 – Learning support**

These categories, category 2 and category 3 are discussed together below because they are closely related and it is difficult to isolate them. The emergent themes in these categories are students’ experiences of the library, computer access and Wi-Fi access points, the institutional culture and lecture venues.

##### **4.3.2.2.1.2.1 Experiences of the library**

The institution has recently upgraded the library and purchased a number of the latest text books. However, the number of available copies for the prescribed books, especially for BIS is very limited. Participant 10 commented in this regard by claiming the following:

*“The books in the library are not enough. I wish we had more books to avoid relying on photocopying”* (Participant 10). Participant 6 complained of not having enough money to photocopy the required material from the library. He said:

*“Yes, we are too many for them [the books]. Some students keep them for a long time”* (Participant 6).

Participant 11 commented on costs and copyright laws related to photocopying by saying:

*“...it is expensive to photocopy and to photocopy the whole book or many chapters is not allowed in the library. We do not have the money to buy the books”* (Participant 11).

The books in the library are obviously not enough to accommodate two hundred students. For that reason, the Internet was considered as an invaluable alternative to the limited number of prescribed books.

#### **4.3.2.2.1.2.2 Experiences of computer access and Wi-Fi access hotspots**

Computer laboratories were inadequate also. Participant 5 raised dissatisfaction regarding access to computer labs, stating that the time they spent in the labs was not enough. She stated:

*“We don’t have enough time to practice in the lab. Sometimes when doing these presentations you want to write a graph or draw a picture in a particular way, but you can’t because you were not told how to do it”* (Participant 5).

A similar drawback identified with regards to the lecture venues was observed in the computer labs especially the ones used for teaching and learning. This is evidenced by Participant 7’s comment as follows:

*The institution has limited laboratories and even a small space at the library for using computers, so every time am free I always rush to the library or the laboratory to study... Even the wireless-fidelity (Wi-Fi) helped sometimes when am doing my research even though it is disengaged sometimes. Also the large number of students in the classroom helped. They assisted me* (Participant 7).

Participant 7 criticised that the Wi-Fi access hotspot was limited. Sharing the same sentiment, Participant 9 added the following:

*“I wish the Wi-Fi is expanded to the lecture halls. For now it is in one place only, the library. Expanding the Wi-Fi hotspots could help us a lot. For us who stay at student village*

*sometimes we have to walk from the student village to the library. This is difficult if it is raining or the weather is cold or hot” (Participant 9).*

Participant 9’s comment suggests that having the Wi-Fi access limited to the library and its surrounding areas was inconvenient for students who did not stay in the main residence areas in the institution. Participant 8 added that

*“The Wi-Fi should be available in public spaces like cafeteria and the lecture halls. We need the Internet. It is difficult to complete the exercises with limited Internet access points” (Participant 8).*

Almost all participants agreed that the computer laboratories were not adequate and Wi-Fi access points were not enough to cater for all students and needed to be expanded. It was only Participant 10 who expressed a different view:

*... I did not see a problem with the labs. I got the Internet when I needed it. But I also wish computers could be expanded for the practical. Because we are many sometimes we had to share a computer. This is not very helpful because each one of us wants to type during the session. Computers are enough for students to use at writing centres, but are few for teaching. The number of computers in the lab for teaching must be increased. They are not enough (Participant 10).*

Participant 10 made an accurate distinction between computer labs used for teaching and learning and computer labs used for students’ access. There is only one computer lab for teaching BIS and four computer labs for students’ access. These are the computer labs that are used as writing centres where laboratory assistants are placed to assist students in completing their assignments.

Students registered in the extended programme were better equipped because they were given tablets as part of their academic development. Participants had the following comments regarding the tablets. Participant 4 commented:

*“The tablets that the university provided us make access to the Internet easy. I downloaded the videos and watched them at home to complete the preparation exercises” (Participant 4).*

Participant 11 shared the same sentiment saying the following:

*“That’s true... the tablets were very helpful. They assisted me a lot when accessing the videos and the Internet” (Participant 11).*

However, not all students had that same privilege, subsequently, Participant 3 said:

*“I wish we all had tablets like the students from extended. The institution is separating us. One group of students has tablets the other group does not have. We need to be treated the same. We also need the tablets as mainstream students”* (Participant 3).

The supply of tablets by the institution had been an ongoing issue between the mainstream students and the extended programme students. Participants’ comments above support that distinction. The institution is perceived to be treating the students in the different streams differently. We now turn to a discussion on institutional culture.

#### **4.3.2.2.1.2.3 Experiences of the institutional culture**

In addition to the limited computer laboratories and Internet access points, students believed strongly that the institutional culture had impact on the way they experienced the flipped classroom. When the flipped classroom approach was introduced to them they felt it forced them to be independent. Subsequently, it was not easy for them to change their perception about it. This is evidenced by what Participant 5 said as follows:

*I am used to be taught. This way of teaching was not easy to me. Because of the way the subject was taught I ended up hating it. I did not like BIS. I don’t like to present and talk in front of the class, especially a large class like ours... Why does WSU admit many students knowing that there is no space for them?* (Participant 5).

Participant 5 blamed the institution for admitting more students than the available capacity of the classrooms. Participant 7’s comments confirmed the influence of the institutional culture in the way they perceived the flipped learning approach by expressing the following:

*To be honest with you [lecturer’s name], the way we rejected this flipped teaching style has everything to do with how we are taught in other subjects. Even you! You used to teach us in a different way. When you changed your normal way, we started to think maybe you are too busy, that is why you cannot teach. But now we know you taught us. We know better than the first way of teaching. Thank you for bringing this way up...* (Participant 7).

Participant 7 acknowledged that the participants’ prior perceptions of what constitutes good teaching practices shaped the extent to which students’ accepted the new pedagogy.

The following theme discusses the students’ experiences of attending in the lecture halls.

#### 4.3.2.2.1.2.4 Experiences of lecture halls

Some lecture venues were not adequate for large class sizes. For instance, in lecture venues where there were no supporting equipment like microphones and speakers, students complained of disturbances like noise, and the lecturer's pitch that was not audible enough for students seated at the back of the class. This is evidenced by Participant 11's observation as follows:

*In large classes not necessarily in BIS only, students make noise and it is difficult to hear the lecturer. It depends where you sit in class. If you sit at the back you cannot hear the lecturer because students make noise. Sometimes the lecturer is not loud enough for you to hear. That is why students start making noise. If I am late in class, that day I won't hear a thing. So studying and doing a research before I attend the BIS class helped me a lot (Participant 11).*

Participant 8 made a similar contribution by saying:

*"I am not comfortable when I attend in other venues other than the auditorium because I cannot hear everything. I wish WSU can provide us with enough lecture halls because we are too many for AT09 and AG17" (Participant 8).*

Participant 3 added to this view by exclaiming:

*"Our classrooms are not big enough for all of us..." (Participant 3).*

The participants comments above show that some of the lecture venues used to teach BIS were not adequate for accommodating the large number of students. Some of the used venues were small and became overcrowded. Consequently, they did not have adequate desks and chairs suitable for all students, resulting in some students attending lectures standing. This made it difficult for such students to write notes comfortably. Participant 11 commented on this discomfort they experienced by saying:

*"The number of desks and chairs in other classrooms are not good. We need more of them. If you come late to class you will stand for two periods" (Participant 11).*

This complaint was raised by the same participant earlier asserting that she could not hear the lecturer when seated at the back of the large class. Participant 1 agreed with this claim asserting that the auditorium was the only venue that she preferred. She asserted the following:

*“Except for the auditorium, the desks and chairs are not enough in some venues... causing me not to attend classes if I am late because obviously the venue will be full” (Participant 1).*

Insufficient lecture venues disturbed students, especially when a planned assessment had to be cancelled. Participant 8 complained, saying:

*Changing date for tests and presentations are not good. We prepare for these things... Changing them is not good at all. There was the day when we had to postpone the presentation because the data projector was not available for us to use an alternative venue when there was a workshop in the auditorium. I think these things need to be planned. They inconvenience us. I was ready to present on that day... (Participant 8).*

Participant 8’s grievance resulted from a cancelled presentation. The auditorium that we use for presentations was booked for an occasion on that day, and I was not informed in advance to cancel the presentation. Regrettably, there was no alternative data projector for use in any alternative venue. That was unfortunate. The following section deliberates on students’ experiences of content and technology.

#### **4.3.2.2.1.3 Category 4 – Content**

This category presents students’ experiences of the teaching materials and assessment.

##### **4.3.2.2.1.3.1 Experiences of the teaching materials**

Content that students learnt came in various forms including the Internet, textbooks and online videos. Participants appreciated the use of the Internet as the source of information. Students believed that the flipped classroom approach exposed them to different university environments. Participant 4 stated the following:

*The flipped classroom was good. Thank you for bringing it up. It was like... you learn from many universities and the case studies show what is happening in businesses... The same topics are explained in the same way although the examples are not the same. What we learn at WSU is relevant... it is done in the same way in other universities as well (Participant 4).*

Sharing the same sentiment Participant 9 agreed:

*“I agree with [student’s name], I also learnt that what is taught at WSU is not different from what is taught in other universities. The same topics are the same...” (Participant 9).*

The comments participants 4 and 9 made above suggest that the flipped classroom approach enabled them to learn from other institutions and that through the adoption of the flipped learning approach they were able to relate what they learnt at WSU to the real world.

Participant 7's comment confirmed the different sources of information that were used in the course as follows:

*"When this style of teaching was used I enjoyed it a lot. It allowed me to understand the textbook better. It gave me more examples to understand the chapters better. I learnt more from the Internet, the textbook, the pamphlet and even from my classmates"* (Participant 7).

Participant 9 mentioned the influence of the prepared study material or notes in their learning experiences. Participant 9 agreed with Participant 7 in this regard stating the following:

*"How can we forget the notes people? They were very helpful to me. I understood them. I managed to understand the syllabus because of the pamphlets. I wish we have the same study material for all subjects. They help a lot"* (Participant 9).

The study material was a summary of the key aspects of the prescribed book to enable students to understand the textbook. We now turn our discussion to students' experiences of assessments.

#### **4.3.2.2.1.3.2 Experiences of formative assessment and feedback**

Formative assessment was another aspect of students' concerns. Some students viewed it as the waste of their time. They were concerned with finding the correct answers to the formative assessment questions and expected to be rewarded for that. The following comment by Participant 10 maintains the following:

*You see... it is difficult to know what is right or wrong because you are not told earlier. You make lots of mistakes because you are never taught from the beginning what the terms mean. Worse and worse... you are expected to answer the questions at the end of the video... I found it difficult to work this way... what is the point of learning something on your own when it is still going to be discussed in class? Do you get marks for it? No. ...its' waste of time!* (Participant 10).

Participant 10's comment suggests that he did not regard getting wrong answers as part of the learning process; he preferred the traditional summative assessment method, expecting to be rewarded marks for every activity he participated in during class.

On the contrary, some students understood and appreciated the role of formative assessment. Participant 11 expressed her appreciation as follows:

*I used to complain at first..., but the exercises we wrote that do not carry marks were helpful to me. I wish we had more of them. I picked up my mistakes and I avoided the same mistakes in tests and exams. I thought the exercises that we did in class were the waste of time because they did not carry marks... But now I know they are important. I wish all lecturers can use them now and again in all classes. Getting comments was good because you learn a lot. You think about the same mistakes you made and avoid repeating them when writing a test and exam* (Participant 11).

Participant 11 appreciated the lecturer's efforts of marking formative assessments and providing feedback to students, claiming that the identified mistakes in answering formative assessment questions were not repeated in summative assessments. The limitation on giving feedback was the lecturer's failure to read every student's answers because the group was large. Subsequently, some students were unhappy. This can be observed from Participant 1's comment who said:

*"... What worries me is that I did not have enough time for the lecturer to look at my work like one-on-one. The comments made in class were general and sometimes for us as the group. I wanted him to read my answers and tell me if they are right or wrong. ..."* (Participant 1).

On the contrary, the same disadvantage of not receiving individual feedback was considered advantageous by some students, especially when they had not done the homework. This is supported by what Participant 2 said:

*"Although I like the lecturer to read my work and comment on it, I liked that he could not read everyone's work when I have not done the work... (Laughing)"* (Participant 2).

This statement suggests that some students enjoy being unidentified by the lecturer in large group settings.

Similar students' concerns were related to summative assessment. They were worried because they observed the lack of alignment between the group work and the perceived final examination. This is evidenced by what Participant 9 claims:

*“I was concerned with this type of teaching and did not believe that it could help me understand the syllabus and pass in exams. Why work in teams when we are to write exams as individuals?”* (Participant 9).

Participant 9 did not believe that working in groups and making group oral presentations would help them perform better in written final examination. Additionally, Participant 10 felt that the pedagogy was demanding and forcing students to concentrate on one subject at the expense of others. His comment affirms that as follows:

*“This teaching style takes a lot of our time... We had other subjects to learn. The lecturer seemed to care about his subject only. What made it worse, we work as a group but we write exams as individuals; what is that...?”* (Participant 10).

Participant 10 shared the same sentiment with participant 9 concerning the misalignment of assessment tasks, adding that the pedagogy took up time that could be dedicated to other courses.

Correspondingly to the delayed feedback on formative assessments, students complained of getting their scripts late after summative assessments. Participant 7 commented in this regard by exclaiming:

*“You submit an assignment today and it takes time to get results. I don’t like that. These things need to be addressed”* (Participant 7).

Participant 1 added that timely feedback would be beneficial, saying:

*“I understand that we are many. But it would assist us a lot to get lecturer’s comments about the assignments we have written before the next presentation is due. We learn a lot from our past mistakes”* (Participant 1).

Marking of assignments was done in conjunction with teaching and attending departmental meetings that resulted in delayed completion. Unlike marking multiple choice and true or false questions that were easy to mark, it was difficult to complete quality marking of many assignments in a short space of time.

Participants displayed different views regarding assessments and feedback. Some participants felt strongly that formative assessments should be conducted frequently and the feedback provided timely for both formative and summative assessments. Some participants felt comfortable when their scripts were not marked in formative assessments. This was mainly the case when they had not done the homework.

The following theme discusses students' experiences of technology.

#### **4.3.2.2.1.4 Category 5 – Technology**

This category presents students' experiences of the online videos and computer literacy and the Internet.

##### **4.3.2.2.1.4.1 Experiences of the online videos**

Some participants were concerned with the quality of the online videos believing that they would understand them better if their lecturer produced them. Participant 7 stated:

*On my side, I struggled to understand the videos... I listened to the whole presentation and get nothing still, until I repeat the video so many times and consult the dictionary to check some words... To me the dictionary helped a lot. If I don't understand something, I check the dictionary. My problem was the way the presenters in those videos speak. They say words different to us and it takes time to understand them. Sometimes the tone is too low that you cannot hear them (Participant 7).*

Participant 5 had a similar experience saying:

*“Yes, the way of speaking has something to do with how we understand. Many presenters did not call the words the way that we do. Some videos are boring. If you don't have a dictionary you cannot hear a thing. Why don't you create your own videos...?” (Participant 5).*

Many weaknesses can be identified from the participants' comments. The need for a dictionary suggests that the language used was not appropriate to the level of the students. The presenters' accent was identified as another weakness. If the lecturer prepared his or her own videos such weaknesses could be eliminated. Participant 6, however, argued that he was satisfied with the quality of videos. He said:

*For me I do not complain for spending much time watching those videos. I think this should be done now and again to improve our learning experiences and to be used to other people's accent. It is natural that we pronounce words differently. So we need to be used to that (Participant 6).*

Although the quality of the videos was considered as a weakness because of the tone of the videos that was sometimes low, Participant 6 argued that students needed to be

exposed to other people's accents. The next theme discusses students' experiences of computer literacy and the Internet.

#### **4.3.2.2.1.4.2 Experiences of computer literacy and the Internet**

Although the Internet was seen as an alternative to the limited number of prescribed books in the library, some students felt overwhelmed with information resulting in them struggling to get what they wanted. Participant 1 exclaimed:

*You write few keywords and the Internet gives you many answers and you don't know which one to choose. I don't find this helping us. Information is too much and it is difficult to get only what you want. I try to do this referencing thing, but I never get it right. The lecturer will always complain of missing something, a full stop here, a date there, a comma here. This is too much (Participant 1).*

Participant 2 argued that in addition to the massive information from the Internet, referencing it correctly was an additional challenge. He said:

*The Internet is good when you know what you want. I agree, it can give too much information and you end up not knowing what is right or wrong. All in all I can say it is good and bad depending on what you do. To me, it helped me a lot because I accessed all the material I needed and I completed my tasks on time. I also try to reference well. If you follow the guide. It can be possible. I am not perfect in it also (Participant 2).*

Participant 2 acknowledged Participant 1's point of view, however, he added that referencing is an attainable academic skill if one follows the given guidelines. Participant 4 agreed with this claim testifying the following:

*I can find what I look for and write it in the format required. Searching for relevant information used to be difficult to me, but teaching this way helped me learn to improve the searching skills. I improved the googling skills. I know how to use combination characters like the plus sign and the inverted commas when searching (Participant 4).*

Participant 4's comment confirms that selecting relevant information online is a skill that is also developed after a while. He claimed that he had improved his searching skills and knew how to combine key words in the search engine. Participant 8 claimed to have developed computer literacy skills as the result of the flipped classroom approach, declaring:

*I learnt new word processing features like automated table of contents. I became confident in using PowerPoint for presentations. The computer labs helped me a lot because there were lab assistants there to help me when I am stuck. I learned doing different things on my own in the computer. The Internet was available most of the time in the labs, but I wish the Wi-Fi is expanded so that I don't go to the lab every time I want the Internet. I did not see a problem with the labs. I got the Internet when I needed it (Participant 8).*

As a result of the flipped classroom approach Participant 8 improved his computer literacy skills and presentation skills as well.

The following section reflects on the students' experiences of the learner support.

#### **4.3.2.2.1.5 Category 6 – Student**

The category of student presents students' experiences of peer support, learner independence, performances and academic dishonesty, and personal and academic development.

##### **4.3.2.2.1.5.1 Experiences of peer support**

Participants acknowledged that the flipped classroom approach was different and effective compared to the traditional teaching approach. Although it was challenging and requiring more hard work, it enabled students to learn more and stimulated some students' enthusiasm to learn. Students indicated that the group work that was the requirement in the flipped classroom approach enabled them to work as a team. This enabled them to learn from one another. Participant 9 shared her experiences as follows:

*Sometimes I was lazy and did not want to do the work. But my group members encouraged me to work. We set rules at the beginning of the semester and we said everybody must obey them. We knew we were to work hard to complete the tasks. This worked well for me even when I was lazy to work, it motivated me because I did not want to disappoint my group members (Participant 9).*

Participant 10 agreed with Participant 9 saying:

*"I also liked working with my group we learnt a lot from each other" (Participant 10).*

Participants 9 and 10 observed that the group work was successful at encouraging students to complete the tasks. Participant 7 shared a similar experience:

*“Hard work does pay... During class discussions you felt lost if you did not do the preparation work. You see that some students know what the lecturer is talking about but you on your side you are lost. This motivates you to work hard to be the same as other students”* (Participant 7).

Participant 7's comment confirms that participating students motivated other students through their engagement in class discussions and completion of related activities. Participant 9 mentioned that she attempted to adopt the same learning strategy to other subjects as well. Here is her assertion as follows:

*I tried to use the same method of learning BIS in other subjects and it works well for me. I read the chapter before the lecturer teaches it so that I understand what he or she is talking about. This new way of teaching helped me not to depend on the lecturer. I can read the chapter and ask the lecturer in class if there is something I do not understand. But it is hard work* (Participant 9).

Participant 9's comment shows the possibility of transferring this learning approach to other subjects. Participant 8 also showed that the approach improved students' engagement in class activities, stating:

*“I always had something to say in class discussion because of this way of teaching because I understood the chapters. I did not have a problem explaining my answers because I understood. Unlike in the first chapters where I memorized things”* (Participant 8).

It can be argued from Participant 8's comment that students' oral skills also improved as a result of adopting the flipped classroom approach.

Group work enabled students to learn to discipline from one another when they strayed from the ground rules they placed for themselves. Participant 8's comment confirmed this statement:

*The rules we set with the lecturer at the beginning of the semester kept me going... I worked well with my group members and as a group we knew how to discipline a group member when he or she breaks the rule. We followed the guidelines the lecturer gave us... We learnt a lot from each other* (Participant 8).

This comment acknowledges that personal skills were also developed together with academic skills as a result of adopting this pedagogy. Participant 7 recognised that the pedagogy enabled them to learn independently. She acknowledged the following:

*“I was able to learn on my own. When we met as a group I already knew my answer to the questions. I just met the group or went to class to compare my answers to those of my classmates”* (Participant 7).

Group work encouraged students to adopt a deep approach to learning because they wanted to share their knowledge with their peers. Participant 10 exclaimed:

*“My classmates were very supportive. It was my first time I learnt this way, but I enjoyed it very much because of the way we did as a class. We supported one another”* (Participant 10).

Participant 10 appreciated the significance of group work in his studies. He argued that his peers were very supportive and subsequently, he enjoyed the learning process. Sharing the same sentiment, Participant 4 appreciated the support he received from his peers claiming that:

*“The groups were not in competition. They supported each other when they were discussing. Even in presentations, their comments built you to be a better person”* (Participant 4).

Participant 8 supported the participants’ views adding that:

*“Although I did not like this style of learning at the beginning, I see its benefits now. The group work enabled me to learn better. I wish we have more group work in future”* (Participant 8).

Participant 1 felt the same way stating that:

*“It’s nice to belong to the group because if you do not understand something, may be your group mate will understand it and explain it to you. That makes you to get better marks that you were not going to get if you worked on your own”* (Participant 1).

Participant 1 acknowledged that group work did not only influence members to participate, it also influenced them to improve their grades. Participant 6 determined that group work was helpful throughout the learning process, declaring that:

*We shared ideas throughout... in groups when preparing for class activities and in class when we are asked to discuss the exercises in pairs and share them with the class. We shared information when preparing for presentations. We wanted every group member to have the same knowledge so that no member can decrease our marks in presentations* (Participant 6).

Participant 6 confirms Participant 4's comment that groups were not in competition with each other. Peers were supportive to one another throughout the learning process. Participant 11 appreciated the value of brainstorming ideas in group meeting, stating that:

*"Generating ideas in a safe way as students where everyone is willing to learn from one another was a good experience for me"* (Participant 11).

Participant 10 felt the same way asserting the following:

*"Taking different views from different students gave me an opportunity to understand the subject more"* (Participant 10).

Participant 8 concluded:

*"Different people have different views about the topic. Allowing them an opportunity to voice their views without judging their views allows students to learn from one another. They make mistakes in the discussion and do not repeat them in tests and exams"* (Participant 8).

The participants unanimously agreed that group work influenced them to perform their activities better than they would if they were to perform them individually. The students' experiences of independent learning are discussed in the theme that follows below.

#### **4.3.2.2.1.5.2 Experiences of independent learning**

Students who accepted this approach developed some degree of independence. Participant 11 emphasised this claim by saying the following:

*"You see... If you do what the lecturer told us to do, you go to the website and watch those videos... You get many examples about that one topic. You are like learning from different universities and lecturers. You start not to rely on your lecturer to come with information"* (Participant 11).

Contrary to Participant 11, Participant 5 felt strongly that they needed to be taught through the transmission approach, not the other way round. She declared the following:

*I think the lecturer should not force us to do this thing. It is his duty to teach us. Why do we have to learn on our own? He always talks about changing mentality... changing mentality... why? As a lecturer his duty is to teach us. Not to make us do his job... In all other subjects, lecturers are teaching us. It is only in this subject [BIS] that we have to do things on our own. I don't think this is the right thing. If it is, why is [the lecturer] the only one doing it?* (Participant 5).

Learner independence was identified as an advantage of this pedagogy by some participants. On the contrary some participants felt that they were forced to be independent and that did not fit well with them. The theme that follows below discusses students' experiences of performances and academic dishonesty.

#### **4.3.2.2.1.5.3 Experiences of summative assessments and academic dishonesty**

Participants believed that the flipped classroom approach was rewarding because it helped them improve their grades in both tests and final examination. Participants claimed to have better grades in the chapters that were taught using the flipped classroom approach compared to the grades in chapters that were taught in the traditional approach during the same semester. Participant 7 confirms this as follows:

*“Mhh! This strategy worked at the end... I scored more marks for my DP and exams... and I'm happy [laughing]”* (Participant 7).

Participant 11 agreed, stating the following:

*Me too! My test 2 marks were far better than test 1 marks. This shows that this way of learning was good. To me this way of learning was very helpful. I have a better understanding of the chapters that are taught this way, if like... I compare them to those chapters we did first* (Participant 11).

Participant 8, however, did not fully agree that improved grades were as a result of the flipped classroom pedagogy. He raised concerns claiming that he had seen some students cheating in assessments. He said:

*“I hate to admit this, but some students cheated in tests and this did not sit well with me. Those students get marks they do not deserve”* (Participant 8).

Participant 4 agreed with Participant 8's claim stating:

*“I noticed that too. Some students get assisted to pass the tests. The students who are supposed to invigilate sometimes help their friends out”* (Participant 4).

This was very disturbing because it was impossible for a single lecturer to supervise tests in such a large group of students. Additionally, it was impossible to get assistance from other lecturers because lecturers often work in limited timeframes coupled with similar challenges associated with large classes. Hence there was reliance on student assistants. The next theme discusses students' experiences of personal and academic development.

#### 4.3.2.2.1.5.4 Experiences of personal and academic development

Participants believed that the need to present orally more often encouraged them to learn for understanding as opposed to rote learning for the sake of completing the assignment. This is evidenced in Participant 6's statement as follows:

*I used to prepare presentations by memorizing my part without caring about what my group mates will present. But in this class this was different. I know that I will be asked to present any part of the topic and I will be required to answer questions on what I will say. This made me to know my presentation so that I can answer questions that will follow up from it (Participant 6).*

After oral presentations students had to answer questions based on what they presented. This encouraged them to adopt a deep approach to learning. Participant 9 agreed with this claim adding that:

*I developed many skills like communication, presentation, using a computer, discussing, working with my group and so on... I can now try new things on my own, browse the Internet and even work hard in other subjects. BIS was very helpful to me. I work hard in other subjects as well (Participant 9).*

Participant 9 mentioned communication, computer literacy, working in groups and discussions as additional benefits of adopting this pedagogy. Participant 7 also agreed with this claim by adding that:

*Even though I do not get it 100% right, I now know how to write assignment in a right way. How to write referencing inside your text and in the list at the end as references. When it comes to presentations, I am not afraid to present any more. Speaking in a large group like ours helped me to boost my confidence. I can present now, as long as I know my story... Thank you for bringing this style of teaching [lecturer's name] (Participant 7).*

Similarly, Participant 7 added academic development and public speaking as the subsequent benefits of the flipped classroom approach. Participant 4 claimed that the flipped classroom approach enabled him to improve time management skills, asserting the following:

*I was poor in managing time... After learning BIS, I am always on time in all my other subjects as well. I don't agree with every statement my classmates make. They need to convince me with facts. I don't believe everything I read. I can*

*debate now... We always had deadlines to meet. This helped a lot to manage time for ourselves (Participant 4).*

Participant 6 shared the same sentiment as follows:

*I learnt to complete the tasks on time. I did not want to lose the marks for submitting the task late, more especially the assignment. I encouraged the group members to do the same. We did not have a problem with that. We submitted the assignments on time. Although it was not easy in the beginning but I managed to complete the tasks on time (Participant 6).*

In addition to time management recorded by participants 4 and 7, Participant 11 made this addition:

*...what can I say...? I improved a lot. I have improved my personal skills. I am a responsible person now. My group mates know they can trust me. I am organised. If I promise to do something, I will do it. I learnt to work on my own and try to manage my time to meet the deadlines. This comes with work harder and feeling free to try new things (Participant 11).*

Participant 11 claimed to have developed personal skills like independence, time management, hardworking, team working, and being organised as the result of adopting the flipped classroom approach.

Participants generally, claimed that the flipped classroom approach helped them develop some interpersonal skills like confidence in public speaking, presentation skills, time management skills, and academic skills like assignment writing and computer skills. Students acknowledged that their oral skills had improved as the result of the debates and presentations that were conducted in class. Their time management skills had improved of the need to meet deadlines at different times in their assignments, tests and presentations. Participant 5, however, was the only participant who raised a unique comment, arguing that the following:

*...I want to add another thing. I am used to using social networking on Internet. It is difficult to concentrate on my work when I can see what my friends post on Facebook and Twitter. I think I need to discipline myself. Otherwise the Internet is tempting me to play games or watch movies. This waste a lot of time (Participant 5).*

Participant 5 confessed that she wasted time on online entertainment and social networking, and as a result of that could not complete all the tasks as required. The next section concludes the analysis of the focus group discussion data.

#### **4.4 Conclusion**

The chapter presented the findings from both the quantitative and qualitative data in an attempt to understand the pedagogical underpinnings of the flipped classroom approach as well as students' lived experiences of this pedagogy in large class settings at WSU. The documents analysed were on the most part constructively aligned and subsequently suitable to improve the learning experiences of students. The survey data revealed that students agreed with almost all survey questions except the three questions that related to students' engagement in class activities, motivation to attend classes and meeting their expectations of the course. The focus group discussion data revealed a contradicting view with regard to engagement in class activities. The majority of participants in the focus group discussion showed that they were motivated to engage more in class activities and subsequently reaped valuable benefits like improved grades. The group discussion data revealed similar results regarding class attendance. Students generally agreed that the introduction of the flipped learning approach initially caused them to skip classes. This linked well with the fact that it did not meet their expectations of the course. The chapter that follows uses the lenses of constructive alignment theory and the complex adaptive blended learning systems framework to respond to research objective 3 that attempts to understand why students experienced the flipped classroom approach in the way that they did.

## Chapter 5

### 5. *Discussion of Findings*

#### 5.1 Introduction

In the previous chapter the quantitative as well as the qualitative findings were presented. This chapter provides a theoretical discussion of the findings by drawing on Biggs' (2003) constructive alignment theory and the CABLS framework that served as the lenses for the data production strategies. The data was organised and presented according to the categories and themes as expounded by the CABLS framework. The constructive alignment theory was useful in the document analysis of the BIS curriculum documents that reflected the pedagogical underpinning of the flipped classroom approach. By drawing on the above theoretical frameworks, this chapter aims to provide an explanation for why the participants experienced the flipped classroom pedagogy in the way that they did.

#### 5.2 **Constructive alignment of learning outcomes, teaching and learning strategies and assessment practices in the WSU context**

The use of the flipped classroom approach was investigated in a large class setting. Bligh (1998) argues that lectures are effective to teach information, but they are ineffective “*to promote thought, change attitudes, or develop behavioural skills...*” (p. 20). For this reason, the student-centered pedagogies are endorsed for the development of higher order thinking skills (Biggs, 2003; Renaud *et al.*, 2007), hence the adoption of constructive alignment that recommends teaching to be planned from the intended learning outcomes as stipulated in the curriculum (Biggs, 2003). Constructive alignment is a teaching system comprising of the students, the teachers, and the cognitive processes as the essential elements (Brabrand and Dahl, 2008). In a constructively aligned curriculum the starting point of teaching a course is the identification and interpretation of its intended learning outcomes (Biggs, 2003; Boyd, 2015).

##### 5.2.1 Intended learning Outcomes

Beaumont (2005, p. 5) defines the intended learning outcome as an “*outcome of a learning process that can be assessed in some way i.e. it is measurable*”. These learning outcomes are measured on what the student does as opposed to what the lecturer does. This means that they are student-centred (Biggs, 2003; Beaumont, 2005). Kennedy, Hyland and Ryan (2012)

define the intended learning outcomes as “*statements that specify what learners will know or be able to do as a result of a learning activity. Outcomes are usually expressed as knowledge, skills or attitudes*” (p. 4). Kennedy *et al.*'s (2012) definition suggests that the intended learning outcomes comprise of the knowledge, skills and attitudes that students are supposed to gain at the end of a module/course/programme. Constructive alignment theory, therefore, suggests that the teaching activities, pedagogy, resources, and assessment tasks should function as a collective unit to achieve the intended learning outcomes (Biggs, 2003; Warren, 2004). WSU has adopted the outcomes-based education (OBE) as a teaching strategy. Recently, WSU organized a workshop to improve lecturers' understanding of OBE and constructive alignment. Subsequently, course outline templates are designed along the OBE principles. The learning outcomes of the BIS programme as shown in the BIS course outline in Appendix A were stated as follows:

*After engaging with course material and class activities you will able to:*

*Explain the meaning of terms used to describe common techniques and concepts in business information systems.*

*Describe the ways in which information technology is and will be used in business and management.*

*Identify and suggest appropriate responses to managerial and organizational issues stemming from the development, implementation, and use of computer-based information systems.*

*Review the reality of implementing international information systems, including economic and cultural differences.*

*Summarise the major social and ethical issues involved in the use of information technology*

The verbs used to express the learning outcomes can be observed to be to *identify, describe, explain, suggest, review and summarize*. In Bloom's levels of cognitive demand the combination of these verbs in the learning outcomes of a programme suggests that the programme encouraged students to develop from lower order to higher order thinking skills (Biggs, 2003). The document analysis of the BIS curriculum that was undertaken during the study and presented in chapter 4 reflected that the teaching activities, pedagogy, resources, and assessment tasks were constructively aligned to each other before and after the flipped classroom approach was introduced. This was the case because the template used to design a curriculum at WSU adopts the outcomes-based outcomes (OBE) principles (Mayisela, 2013). This means that the BIS curriculum had undergone the four major steps of constructively aligning the course, which are, “1. *Defining the intended outcomes (the objectives)*, 2.

*Choosing teaching/learning activities likely to lead to attaining the objectives, 3. Assessing students' learning outcomes to see how well they match what was intended and 4. Arriving at a final grade” (Biggs, 2003, p. 2-3).*

The discussion that follows explains why students experienced the teaching and learning experiences in the way that they did.

### **5.2.2. Teaching and learning strategies**

Think-pair-share was the common student-centred approach that was used in conjunction with the flipped classroom approach to improve students' engagement in class discussions. Usman (2015) defines the think-pair-share strategy as “*a cooperative discussion strategy to help students work in groups. In applying this strategy, the lecturer poses a question, preferable one demanding analysis, evaluation, or synthesis, and gives students about a minute to think through an appropriate response*” (p. 39). In the BIS class, the think-pair-share approach was applied by giving a challenging question to students to consider. Individual students were then given approximately five minutes to prepare their responses to the question. Students were then required to discuss their responses to the question in pairs, and later share the pairs' responses with the entire class. “*Think-pair-share encourages student participation in [discussions] and promotes forming and critiquing arguments both in small and large groups*” (Sampsel, 2013, p. 3). The flipped classroom approach was applied to achieve the learning outcomes of the BIS course as well as students' soft skills also known as the critical crossfield outcomes in OBE terminology. In the BIS course outline (see Appendix A) the critical crossfield outcomes were stated as follows:

*5.2.2.1 You should be **able to solve problems**, which involves: making the problem clear, completing the problem solving process, anticipating the problems that might arise, and evaluating the problem solving process and solutions*

*5.2.2.2 You should **work with others**, which involves: appreciating the purpose of group work, taking notes, and listening to others*

*5.2.2.3 You should **successfully manage themselves and their activities**, which involves: deciding on what is most important (prioritising), checking the quality of work presented for evaluation, and being responsive to changing circumstances*

5.2.2.4 You should **collect, analyse and organise information**, which involves: getting information from different sources, piecing the information together into some sense-making, evaluating the goodness of the information and categorising information

5.2.2.5 You should **communicate effectively** – either verbally, or written.

5.2.2.6 You should **use technology effectively and critically**, which involves: utilising technology to solve daily academic problems interpreting the science behind the technology and recognising the broader impacts of using the technology

5.2.2.7 You should be able to **learn from experience**.

5.2.2.8 You should be **culturally sensitive**.

The flipped classroom approach attempted to achieve the critical crossfield outcomes outlined above. The lecturer believed that it would be impossible to achieve these outcomes through the adoption of the didactic lecture method (teacher-centred approach). The survey questionnaire measured the critical crossfield outcomes stated above and the results of the survey showed that participants agreed that the flipped classroom approach helped them achieve most of the outcomes. Participant 10's comment captures this point. He said:

*I can conclude that the teaching approach used to teach BIS was effective at teaching us beyond what we could learn if we were taught in the normal way. I cannot say it was perfect. There are some things I did not like. But overall, this strategy is good for tertiary education... We learnt beyond the course content... No lecturer can teach you how to socialise. You need to make friends on your own. Through group work, we managed to develop other aspects of life like socialising beyond the classroom scope (Participant 10).*

These outcomes were incorporated into the class activities during pre-class preparation, during class discussions and in assessments. The next section discusses why students experienced the flipped classroom approach in the way that they did.

### **5.2.3 Assessment strategy**

The findings on students' performances (chapter 4 page 53) showed that the students' learning levels were higher when the flipped classroom approach was introduced compared to learning levels when the traditional lecture was used. The verbs used in the course outline showed that the assessment tasks in the traditional lecture approach were constructed mainly at knowledge and comprehension levels of the Bloom's taxonomy as depicted in Table 1 in

chapter 4 page 51. As the example of the assessment task depicted on chapter 4 page 49 shows, the verbs used when the flipped learning approach was utilized signify that the assessment tasks were constructed mainly at application and analysis learning levels of the Bloom's taxonomy. The assessment tasks were constructively aligned to the course outcomes and the critical crossfield outcomes as discussed in section 5.2.2 (Teaching and learning strategies) above. The assessment tasks encouraged students to apply higher order thinking skills. Knowledge and comprehension competences as classified as lower order skills while the rest of the competences as depicted in Table 1 above are known as higher order skills. However, students require to possess lower order competencies to acquire higher orders skills (Yuretich, 2002).

Kerr's (2011) argument that assessment in large classes is a challenge to the faculty is proven true in the study. As the teacher in this large group I used multiple choice and true or false questions in an attempt to reduce the marking load. The general criticism of multiple choice and true or false questions is students' likelihood to guess the right answers. Students can possibly gain higher marks than they truly deserve. Some scholars argue that multiple choice questions and true or false questions are not the reliable tools for assessing students for that reason (McCoubrie, 2004). Despite the criticism, lecturers still use them due to the time constraints (Kerr, 2011).

### **5.3 The roles of the university and learning support in the flipped classroom approach**

Wang *et al.* (2015) the advocates of the CABLS framework argued that the institution needs to have a blended learning strategy, support and service mechanisms in place and the infrastructure should be continuously improved to realise the effective implementation of blended learning. The learner should thus be able to develop the skills of being the researcher, practitioner, and collaborator. The content of any module/programme should support collaborative learning, interactive learning, individualised learning, problem-based learning, and deeper learning. Technology should support synchronous, asynchronous, offline, and online access of information, and learning support should support both academic support and technical support (Wang *et al.*, 2015).

Wang *et al.* (2015) argued that the institutional strategy is essential for the effective implementation of blended learning to take place in any institution. However, it can be argued that having the strategy in place is not enough unless its implementation is enforced.

For instance, in an attempt to realise the WSU strategy, an eLearning Management System, also known as WiSeUp, and the Evaluation of Teaching Policy were adopted at WSU in 2008 (Mafuna and Wadesango 2010; Songca 2014). Despite developing these policies, “*the evaluation of lecturers by self, peers and [Head of Department] (HoD) are not consistently done ...most of these evaluations are voluntary*” (Songca, 2014, p. 11). Songca (2014) admitted that staff at WSU emerged from diverse institutional cultures “*and it will take time for a single WSU culture to emerge*” (p11). This extract acknowledges the diversity of staff and student body and the need for a single institutional culture. Moreover, the extract suggests that policy implementation strategies need to be established for the eLearning strategy to be realised at WSU. The effect of eLearning in teaching and learning at WSU may be well researched, however, the findings of the research are not published. The following extract confirms this claim

*Publication of research findings in ...accredited journals has not been sufficiently realized. [Subsequently the] data remained in theses and dissertations. [This results from the] insufficient participation in workshops that train staff in translating research findings into actual journal articles. [This is also the consequence of] insufficient collaboration across disciplines* (Songca, 2014, p. 11).

There is no doubt that the infrastructure is essential for blended learning to be realised. Bhalalusesa *et al.* (2013) identify the bandwidth as a crucial resource for the realisation of improved Internet services in higher education institutions. The research findings showed that students wished for the Wi-Fi access to be expanded to many public areas like cafeteria, lecture halls and residences. Participant 8 stated:

*Having Wi-Fi access in areas such as the lecture halls and cafeteria could benefit many first and second year students because they are usually accommodated in the student village. This makes it difficult to go to the library at night because of the long walking distance. Secondly, it is difficult to go to the library or the computer labs even during the day when it is rainy or too cold. So the weather conditions determine how often we access the Internet in the library and the computer labs... (Participant 8).*

WSU had a project underway in an attempt to realise the students’ requirements. Songca (2014) argued that eight projects were ongoing and were expected to be concluded by the end of 2016 to address some of the infrastructure issues. Unfortunately, at the time of conducting the study the projects had not be completed. Students will start utilising them next year (in

2017).The projects included the library extensions, the improvement of teaching infrastructure, and were aimed at enhancing student learning experience through the expansion of Wi-Fi access to residences and improved access to printing services in the labs using the Pharos system. Technology enhancement plans were also in place where teaching with technology initiatives were expanded and the training in the effective use of Turnitin and Endnote was provided to staff and students to improve their research capacity. In addition, the video conferencing facilities were upgraded with the backup and disaster recovery hardware and processes (Songca, 2014).

With reference to support and service, the library, Learning and Teaching Department (LTD) and the department of Information and Communication Technology (ICT) provided assistance to students, although students considered it insufficient. Participant 11 appreciated the services the library and the ICT department offered, but wished the services could be expanded. She said:

*“I’m glad that the university provides us with the latest BIS textbooks, but I wish more books could be purchased. The number of computers in the library and the computer labs is very limited considering the number of students the institution has...”* (Participant 11).

LTD hired student assistants to work temporarily as lab assistants and the ICT department maintained the labs. Participant 8 commented:

*WSU had done a wonderful thing by employing some students as lab assistants. This has helped a lot when we want to type assignments in the lab. Sometimes you know what you want to do but you don’t know how to do it; lab assistants were very helpful in such cases. The only challenge I saw was that they were not enough. Sometimes you would go to the writing center and would not find assistants. I understand that they are also studying, but I think the institution needs to hire more of them* (Participant 8).

Although students commended the availability of lab assistants who assisted them at writing centres, they wished for the expansion of such services because they were not enough. Fortunately, this was likely to be realised by the end of 2016 with reference to Songca’ report (Songca, 2014).

*“Integrating technology into teaching and learning may be influenced by the lecturers’ beliefs”* (Mayisela, 2014, p. 118). Mayisela’s (2014) suggestion is confirmed by Songca’s (2014) claim that the eLearning strategy was not enforced and that the lecturers practised

blended learning willingly. This claim was also true in the BIS context. The lecturer was passionate about the use of the flipped classroom and believed that it could influence students' experiences. Hence it was adopted as the pedagogy for BIS.

#### **5.4 The roles of student and teacher in flipped classroom approach**

The student body is naturally diverse (Venable 2004; Chan 2010) resulting in students having different attitudes and experiences of the same phenomenon. Participant 7's and Participant 9's comments below pertain to students' diversity. Participant 7 commended the adoption of the flipped classroom approach, particularly the collaborative work. She said:

*I naturally enjoy speaking in public. This way of learning allowed me to maximise my learning capabilities. I perform better in all subjects that provide opportunities for discussions... That is who I am... I speak freely in class. I don't mind not getting English right. We are all here to learn, anyway. What matters is that you can express your opinions... not how you express it (Participant 7).*

In contrast, Participant 9 complained that she was not comfortable speaking in front of such a large group of students. She said:

*"I can say making oral presentations is good for us students but it depends on who you are. If you are a shy person as I am you don't like to make presentations. Thanks to the group work. It is my classmates that motivated me to keep going..." (Participant 9).*

It is this diversity of the student body that results in students bearing different academic needs in terms of preparation, learning styles, motivation to learn, interest in the subject, and ability to learn (Christopher, 2011). Biggs and Tang (2007) argue that "*There is no such thing as an unmotivated student: all students not in a coma want to do something*" (p. 31), but at varying degrees. In addition, individual students require different individual courtesy and different opportunities for collaboration (Twigg, 2002). The flipped classroom approach encouraged students' collaboration through group work and think-pair-share approach. Participant 7 stated:

*"Working together as a group of students expanded my learning experience. I learnt academically and personally. Belonging socially in a group has many benefits that are beyond the scope of the classroom" (Participant 7).*

A contrary view could be observed from Participant 5's comment. She believed that the support the lecturer provided was not sufficient for her to cope in learning BIS through the flipped classroom approach. She said:

*[The lecturer] did not spend enough time in supporting us. Maybe that was because we were many. The group work helped in a way, but some group members were not participating enough. This caused some of us to lose interest in attending this subject. The lecturer must know that we are different and treat us as such. I don't know how to do it in large classes but some of us prefer to write a test to making oral presentations (Participant 5).*

The research findings showed that the flipped classroom approach enabled the majority of students to develop personal and academic skills. Personal skills included students' ability to work well in groups, improved time management skills, and improved confidence in oral skills like debating, discussions and public speaking. Academic skills included collecting and analysing information, referencing and surfing the Internet and other computer literacy related skills. Participant 10 acknowledged that collaborative work enabled students to perform better than they would if they worked individually. He stated:

*The flipped classroom approach made us students to know one another better. It improved the sense of belonging that is missing most of the time in large classes. We improved many things as individuals. We supported one another, discussed together and improved writing and debating skills (Participant 10).*

The findings above confirmed Kenney and Newcombe's (2011) claim that blended learning increases understanding, interaction, and involvement in the learning process. Similarly, Pascarella and Terenzini (1991, p. 616) declare:

*Perhaps the strongest conclusion that can be made is the least surprising. Simply put, the greater the student's involvement or engagement in academic work or in the academic experience of college, the greater his or her level of knowledge acquisition and general cognitive development.*

Sharing the same sentiment as Pascarella and Terenzini's (1991) argument above, Keup and Sax (2002) state that undergraduate students usually are satisfied with the overall quality of pedagogical practices that emphasise involvement with peers, faculty and course content. On the contrary, the minority of students disapproved of the use of the flipped learning approach. Participant 5's comment below is an example of the unhappiness some students might have had. She stated:

*"I think I should have passed if [the lecturer] taught us in the same way as other lecturers did. His teaching strategy did not work well for me. We had to learn on our own when we had*

*the lecturer to teach us I could not tolerate his style of teaching, that is why I decided not to attend his classes” (Participant 5).*

The experiences of the flipped classroom approach made some students anxious and as a result they lost interest in the subject to the extent of neglecting some classes. Medlicott (2009) argues that students are preoccupied with experiences, anxieties and expectations when they join higher education institutions. Their past experiences and anxieties shaped their expectations of pedagogy. When the pedagogy did not meet their expectations and requirements they regarded it as a poor teaching strategy. This can be observed from Participant 3’s comment below:

*It is not the first time we are learning. Why do we need to be introduced to new things that do not work? Why did we pass in the past years without this flipped classroom thing if we did not know what we were doing? What I see is that these lecturers want to try new teaching ways on us. This is not what we want. We want lecturers who can teach... (Participant 3).*

Participant 9 had a contrary view to Participant 3. Her reasons for not attending all classes were not attributed to poor teaching strategies of the lecturers. She said:

*My reasons for not attending all lectures were different. As I arranged with the lecturer at the beginning of the semesters, I had to go to work on Wednesdays, except when we were to write a test. Apart from that I had no other reason for not attending in other days. I can say that was the result of lack of motivation or interest... (Participant 9).*

Participant 3 and Participant 9’s comments above confirm Wadesango and Machingambi’s (2011) claim that students’ reasons for absenteeism include amongst others the lack of subject interest, poor teaching strategies by lecturers, unfavourable learning environment, too much socialization, and part-time jobs to supplement scanty bursaries granted by various sponsors and poor relations with the lecturers. Wang *et al.* (2015) claim that students, in a blended learning environment, undergo “*a dynamic, adaptive process of change as they interact with other subsystems in the multimodal learning environment*” (p. 383). This illuminates why students experienced the flipped learning approach differently. Since individual students are different, their adaptation to different learning environments were different also, depending on students’ personal characteristics (Trees and Jackson, 2007).

The teacher as one of the critical subsystems needs to play the roles of the facilitator, moderator, guide on the side, and advisor (Wang *et al.*, 2015). Wang *et al.* (2015) support

Cuseo's (2007) claim that students learn better when an instructor adopts the role of a facilitator as opposed to the role of an expert or authority. Students prefer to have active interaction between themselves and the instructor. However, "*the presence of a large number of people in class [discourages students] from asking questions, even if the teacher encourages them to do so*" (Cuseo, 2007, p. 4). Cuseo's (2007) declaration above explains why some students are passive in large class settings despite the introduction of cooperative strategies. Participant 3 complained of some bad behaviours students possessed that possibly influenced some students not to participate in discussions. She said:

*It was disturbing to see students who laughed at each other when they could not express themselves properly in English or when they misunderstood a question. Although the lecturer tried to discourage that on students, some of us were discouraged to speak in class... So even if you felt that you had a valid answer to the question you would still not want to speak if you think your classmates will laugh at you* (Participant 3).

The findings showed that some students had language limitations which affected their ability to ask questions or partake in class discussions. For example, participant 9 stated:

*"I'm not that good in English, you know... sometimes, you see... I have to stop and think before I say something because I don't know the right words to use. You don't want to embarrass yourself in front of so many people... Thinking to yourself becomes better"* Participant 9.

The student's comment above is a typical example of how students felt when they had to ask or respond to a question. Hurst (2015) conducted a study at the University of Cape Town in South Africa to understand language issues students experienced in their university lives. One of the participants in that study said: "*Half of my LECTURERS can't speak or communicate in English. This is a HUGE problem*" (Hurst, 2015, p. 87). On the contrary, the other student stated: "*Simple straight terms will do no harm to us unless you want us to fail!*" (Hurst, 2015, p. 87). The former student's comment above demonstrates students' feelings when lecturers use foreign languages that students do not understand and the latter demonstrates students' difficulty to understand difficult words lecturers who speak English as the first language use in classes. Students will not participate in class activities when they don't understand questions asked in class or when they cannot understand answers the lecturers give to their questions. Participant 5 attested to this claim. She said:

*One of the reasons I did not attend some classes was that I could not hear the lecturer in class as a result of overcrowding and noise. What's the point of attending a lecture when you cannot follow the discussion? You fail to hear students' questions and lecturer's answers to those questions (Participant 5).*

This implies that it takes the highly motivated students to partake in debates and discussions without difficulties. In the BIS context, the lecturer was not an expert of the flipped classroom approach, as it was the first time he taught students using this pedagogy. Noor *et al.* (2012) argue that the instructors' lack of technical knowledge of the pedagogy is a drawback to the effective implementation the flipped learning approach. The role of technology and technological content knowledge is discussed below.

### **5.5 The roles of content and technology in flipped classroom approach**

Online videos were almost the primary sources of the flipped classroom content. This means that the Internet access was crucial for students to perform pre-class activities. Bhalalusesa *et al.* (2013) consider poor bandwidth as one of the drawbacks to effective implementation of blended learning. Houston and Lin (2012) encourage lecturers to prepare their own videos carefully taking into consideration the time and effort required to make the flipped classroom experience effective. The lecturer, thus, needs to possess video recording and editing skills and prepare out-of-class and in-class activities carefully and integrating them logically for students to understand and be motivated to attend the class prepared. On the contrary, the lecturer did not have equipment to record his own videos and videos were not available offline, unless students downloaded them. Participant 8 felt strongly that students would understand the contents of the videos better if they were prepared by the lecturer. He made the following comment in that regard:

*The videos were very helpful because they summarized what could take you a long time to read. The only disadvantage was that they were not straight to the point. I think if [the lecturer] prepared his own videos we could understand the subject better. He would not use the complicated language that forced us to use the dictionary and the examples used would be relevant in our situations...*  
(Participant 8).

The Internet connection was also limited as the group discussion data had shown. Participant 3 complained about lack of access to offline videos. He stated the following comment:

*“Accessing the videos required the Internet to be available. Sometimes the network was down making it impossible to access the videos. It would be better if the videos were made available on DVDs as well”* (Participant 3).

Noor *et al.* (2012) and Bhalalusesa *et al.* (2013) affirm that videos of poor quality frustrate students and destroy their enthusiasm to watch them. Absenteeism or lack of participation in activities could be the consequences of the frustration. Despite these challenges there were students who commended the flipped classroom initiative claiming that it exposed them to real-life experiences of businesses and other universities. Students’ personal characteristics determined the way students experienced course content and technology. For example, some students considered the need to use a dictionary to understand some videos as a challenge because it consumed most of their time. Participant 6 considered the need to use a dictionary more often as a challenge and waste of their time. He said:

*I don’t dispute using bombastic words, but they can waste other persons’ time. The main idea of communication is to share your message across different people. Some of the videos were not in simple language resulting in overreliance on the dictionary for you to understand the video and you had to play it several times* (Participant 6).

On the contrary, some students considered that as an opportunity to learn more vocabulary. The limitations discussed in this section could possibly be the causes of some students’ negative attitudes towards the adoption of this pedagogy when it was introduced. I now proceed to the limitation of the CABLS framework.

## **5.6 Limitations of the CABLS framework**

The CABLS framework’s limitation based on the research data is its failure to accommodate the emotional aspects and their influences on assessment practices of students in the learning process. The unique themes that are worth a discussion that emerged from the data and are not categorised in the CABLS framework are the students’ anxiety and cheating in assessments. The findings showed that almost all participants who contributed in the focus group discussion were in varying degrees frustrated by the flipped classroom teaching approach. Participant 11 commented that the degree of students’ frustration was differentiated by their personal characters and exposure to resources. She said:

*I cannot say that the flipped classroom approach was good or bad. It depends on who you are. In my observation, students who were talkative by nature enjoyed BIS classes more than students who were shy. Another thing, the classrooms we*

*used also contributed to the way we participated in class discussions. For example we could not discuss freely in classes that were too congested* (Participant 11).

Participant 7 explained why it was difficult for her to adapt to the flipped classroom approach. She said:

*“This flipped learning thing would work if we were used to it; if it was used from the first year. Now, it is a bit too late. We are used to the normal way of lecturing that every lecturer uses”* (Participant 7).

Mayisela (2013) conducted a study at Walter Sisulu University investigating the access to computers that the Computer Science students who implemented blended learning had. The purpose of this study was to explore how the students could use mobile technology to outweigh the shortage of computers required for blended learning in that course. The following citation explains the reasons of the students’ frustration observed in Participant 7’s comment above, *“Students who are traditionally used to face-to-face instruction may feel frustrated if the instructor is absent when they want to appeal to him or her to explain learning content”* (Mayisela, 2013, p. 5). Since they are used to being nurtured, they tend to feel abandoned when the lecturer requires them to develop the sense of independence.

Some participants claimed to have observed students cheating in the assessments. It can be argued that some students cheated because they felt they could not pass the module independently of cheating. Medlicott (2009, p. 16) records that, *“during any transition, feelings and attitudes tend to be in flux. This is particularly true of both young and mature people as they embark on higher education”*. As the result of students’ feelings and attitudes, some students decided to absent themselves from classes. Cheating could be attributed to students’ absenteeism. After students realised that they could not pass the module because they did not attend classes or participated in class activities they could have resorted to cheating. Unfortunately, none of the participants indicated to have cheated in assessments. They claimed to have observed their classmates cheating. They were not in a position to give reasons for the cheating. However, Olasehinde (2000) claims that students resort to cheating in tests and examinations because they do not want to fail and they want to meet societal expectations. Ruto, Kipkoech and Rambaei (2011, p. 175) concur that some students cheat because of *“stress and pressures for good grades”*.

It is difficult for a single lecturer to invigilate a large class properly. Lecturers then tend to rely on teacher assistants, who are often senior students. Relying on teacher assistants in

combating cheating in large class settings is a challenge. Participant 4 claimed to have seen cheating students when the assessment tasks were written. He claimed:

*It is not fair to spend time studying and observe a student who does not study getting better marks than you. There were students who were cheating in the tests. Some of them would whisper questions and answers to their friends when the lecturer could not see or hear them. The worst part of it is when the so-called invigilators assist students in copying answers to test questions... (Participant 4).*

This challenge is not unique at WSU. In higher education institutions, generally, teacher assistants are used in invigilation. The teacher assistants who are supposedly useful to assist lecturers in invigilation (Ruto *et al.*, 2011) are sometimes the ones that make the monitoring process more difficult because some of them assist their friends to pass by pretending not to see them when they cheat (Olasehinde, 2000). The worst case scenario is what Olasehinde (2000) calls live wire and contract, where in the former, students access live questions before exam time with the assistance of the lecturer and in the latter, some students influence the lecturer to modify grades tempting the lecturer with a particular benefit attractive to the lecturer. Unfortunately, cheating students acquire good grades that make them more privileged than eligible students.

## **5.7 Conclusion**

This chapter attempted to explain the reasons why students experienced the flipped learning approach in the way that they did. The CABLS framework suggests that the institution, the lecturer, the student, the technology, the learning support and content are the integrated factors that shape the students' learning experiences. The chapter discussed the underpinning reasons for why students experienced the pedagogy in the way that they did by drawing on the CABLS framework and the literature in the area of students' experiences of innovative pedagogical approaches. The limitations of theoretical framework applied were also considered. The general conclusion was that the flipped classroom approach influenced individual students at varying degrees depending on their personal characteristics and their levels of adaptation to the changing learning situations. The institution and the learning environment coupled with pedagogy and resources were identified as factors that influenced students to experience learning BIS in the way that they did.

In the next chapter the summary of the dissertation is provided. This is followed by the recommendations drawn from the conclusions of the study and possibilities for future research.

## Chapter 6

### **6. Conclusion**

#### **6.1 Introduction**

The previous chapter dealt with the theoretical explanations and a discussion on the quantitative and qualitative findings. It attempted to respond to why the participants experienced the flipped classroom approach in the way that they did. This concluding chapter presents a summary of the findings and conclusions arrived at in response to the research objectives of the study. The chapter concludes with a presentation of recommendations to curriculum designers and academics teaching at higher education institutions as well as possibilities for future research in this area.

#### **6.2 Summary**

The real-life experience of teaching large BIS classes during consecutive years at WSU motivated me to conduct this study. As the teacher of the Module, I experienced the challenge of engaging students effectively in such large class settings. This research study therefore, investigated the extent to which a flipped classroom approach which I introduced influenced students' learning experiences in these large class settings.

A review of the literature on the current South African higher education landscape revealed that the problems of large-classes are ongoing (Jansen, 2003; Hall and Symes, 2005; Lategan, 2009; Mouton *et al.*, 2013; Machika *et al.*, 2014; Hurst, 2015). As discussed in chapters 1 and 2 earlier in the dissertation, the open access to higher education coupled with limited subsidy from the government results in large class sizes with a diverse student population who require different motivation and support (Twigg, 2002; Venable, 2004; Trees and Jackson, 2007; Oliver, 2008; Senekane, 2010; Chan, 2010; Christopher, 2011). Lecturers, therefore, need to be equipped to cope with this demanding environment.

ICTs used in teaching and learning can presumably eliminate some of the large-class problems, however, the challenge of inadequate funding makes some universities fail to acquire the latest technologies (Mafuna and Wadesango, 2010; Bhalalusesa *et al.*, 2013; Songca, 2014). Furthermore, the use of technology brings with it a set of challenges resulting in lecturers requiring the necessary training to be able to introduce such approaches in the classroom (Houston and Lin 2012; Hertz 2012 and Zhang 2014). Considering the large-classes that they handle, sometimes in a very limited time-frame, some lecturers tend to be

discouraged to attend training sessions on ICTs and on Pedagogies in higher education, due to their heavy workloads and time constraints (Jansen, 2003; Peruso, 2012).

Through an analysis of the curriculum documents, this study sought to understand the pedagogy of a new teaching and learning approach that included the use of technology. The students' experiences of learning BIS through the flipped classroom approach was also considered with the aim of assisting curriculum designers and lecturers who are in the process of curriculum transformation at higher education institutions. Below is a summary of the conclusions based on the findings of the study.

It can be concluded from the analysis of the curriculum documents that the intended learning outcomes of a module need to be defined clearly in the module outline and be constructively aligned with the teaching and learning activities and assessments in order to assist lecturers and students to achieve those outcomes (Biggs, 2003; Warren, 2004; Beaumont, 2005; Brabrand and Dahl, 2008; Boyd, 2015). The learning outcomes together with teaching and learning activities and assessments should also be crafted in ways that encourage students to acquire higher order thinking skills coupled with the soft skills that are closely linked to the critical cross field outcomes required in the labour market (Yuretich, 2002; Biggs, 2003; Renaud *et al.*, 2007; Govender, 2013; Reddy *et al.*, 2016).

Findings of the quantitative and qualitative analysis predominantly determined that the flipped classroom approach influenced the majority of students in a positive way, although they did not adapt easily to it at first. The acquired positive outcomes as was reflected in their assessments included improved grades. The personal skills like presentation skills, debating skills, time management skills, group work skills were rated as some of the benefits of this teaching approach that were not easily developed during the traditional lecture approach in large class settings. It can be concluded that the flipped classroom approach influenced the majority of students to develop personal and academic skills. The majority of students rated the flipped classroom approach at a lower scale in two aspects, which are motivation to attend classes and meeting their expectations of the module.

The outstanding finding that is worth noting is students' engagement in class activities that showed contradicting results in the quantitative and qualitative analysis of data. As indicated in section 4.3.2.1.2.1 on page 59, the majority of participants claimed that the flipped classroom approach did not influence them to engage more in class activities. On the contrary, in the focus group discussion the majority of participants indicated that group work

and peer support motivated them to engage more in class activities. The results of the focus group discussion confirm the findings in studies that maintain that the flipped classroom approach influences students to engage more in class activities (Musallam, 2011; Bishop and Verleger, 2013; Center for Digital Education, 2013; Chen *et al.*, 2014). The contradiction in findings could be attributed to the limitations of the sampling technique used to select the participants. Fellegi (2010) argues that coverage is a sampling error associated with surveys where the researcher fails to include every possible participant. The coverage error is evident also in census surveys. It could be argued that participants who were influenced negatively could have decided not to participate in the discussion.

Inadequate infrastructure was identified as a limitation to the total implementation of the flipped learning approach. Inadequate venues coupled with inadequate resources influenced the learning experiences of students negatively. Students were not comfortable in other venues (AT09/AG17) and the lecturer was not as audible as in the auditorium where supporting equipment was available. In such under-resourced and uncomfortable lecture environments it can be concluded that the lectures were not as effective as they would have been if bigger and better resourced venues were used. Additionally, videos were sourced online. The sourced videos were not as specific as they would have been if they were compiled by the subject lecturer. Another limitation was that the lecturer was implementing the flipped classroom approach for the first time in his lifetime as a teacher. It can be concluded that all these factors influenced the students' experiences of learning BIS in a large class setting at WSU. I now turn the discussion to the recommendations, future research and concluding remarks.

### **6.3 Recommendations**

In light of the findings of this study, institutions of higher learning may consider the following:

- 6.3.1 Improving its infrastructure (accommodation, lecture halls, libraries, and computer laboratories) and resources (books, desks, chairs, data projectors, printers, photocopiers, interactive boards, video cameras) to accommodate a large number of students.
- 6.3.2 Mandatory staff development courses on innovative pedagogies and curriculum development should be offered to lecturers to support them with designing and implementing approaches such as the flipped classroom approach.

- 6.3.3 Investing in educational technology (and expanding Wi-Fi hotspots) and deriving strategies that enforce the implementation of the existing eLearning strategies.
- 6.3.4 Introducing an integrated approach to student development that incorporates teaching, learning, and support outside the classroom.

#### **6.4 Future research**

The study focused only on students' experiences of the flipped learning approach in one campus for a single subject in a single semester. The study could be extended to involve lecturers' experiences of the flipped classroom approach over a longer period of time. A comparative study could also be conducted to learn from what other lecturers are doing to engage students in similar large class contexts.

#### **6.5 Concluding remarks**

It is the Institution's responsibility to assist lecturers in developing more student-centred teaching strategies that encourage students to be active learners despite the large class settings that currently face the South African higher education landscape. Given the limited supply of resources and funding at universities, it can be concluded based on the findings of this study that the flipped classroom approach is one such pedagogical strategy that enables students to operate at all cognitive levels and in-line with the critical cross-field outcomes that are required in the world of work.

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*Appendices*

**Appendix A - Course Outline**



**FACULTY OF MANAGEMENT SCIENCES AND FACULTY OF SCIENCE,  
ENGINEERING & TECHNOLOGY**

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**Department of Applied Informatics**

**Department of Accounting**

**2016: Module II**

**Course Outline**

**BUSINESS INFORMATION SYSTEMS I (BIS10B1/EBIS1B1)**

**Qualifications:**

**NATIONAL HIGHER CERTIFICATE: ACCOUNTANCY**

**NATIONAL HIGHER CERTIFICATE: ACCOUNTANCY – EXTENDED  
PROGRAMME**

**Delivery Site/s:**

- Queenstown**
- Zamukulungisa**
- Ibika**
- Potsdam**

**Compiled by: BIS Lecturers and edited by S.T. Pika**

## **Important Dates**

- 08 February 2016** – Lectures commence
- 12 February 2016** – Late Registration ends
- 25 February 2016** – Writing of special exam
- 03 March 2016** – Deadline for the submission of special exam marks
- 09 March 2016** – Mini test 1 (*Mainly multiple-choice and true or false questions*)
- 14 – 18 March** – Presentations
- 17 March 2016** – Deadline for the submission of first assessment marks
- 18 March 2016** – First term ends
- 04 April 2016** – Second term commences
- 11 May 2016** – Mini test 2 (*Mainly multiple-choice and true or false questions*)
- 16 – 20 May 2016** – Presentations
- 23 May 2016** – Publication of DP marks
- 23 – 27 May 2016** – Study week
- 30 May 2016** – Examinations commence
- 13 June 2016** – Examinations end

#### 4.2. Purpose of the course

The course is designed to make you knowledgeable of the fundamentals underlying the design, implementation, control, evaluation and strategic use of modern, computer-based Information Systems for business data processing, office automation, information reporting, decision-making, and to a limited degree, electronic commerce. While some of the effort will be devoted to hands-on work with application software. Ultimately the purpose of the course is to help you acquire knowledge in the domain of Information Systems, which in turn can be applied to a number of situations and disciplines, to analyse and solve problems that require ICT solutions.

#### 4.3. Learning outcomes of the course

After engaging with course material and class activities you will be able to:

Explain the meaning of terms used to describe common techniques and concepts in business information systems.

Describe the ways in which information technology is and will be used in business and management.

Identify and suggest appropriate responses to managerial and organizational issues stemming from the development, implementation, and use of computer-based information systems.

Review the reality of implementing international information systems, including economic and cultural differences.

Summarise the major social and ethical issues involved in the use of information technology.

#### 4.4. Soft skills' (Critical cross field) outcomes developed throughout the course

4.4.1 You should be **able to solve problems**, which involve:

- Making the problem clear
- Completing the problem solving process
- Anticipating the problems that might arise
- Evaluating the problem solving process and solutions

4.4.2 You should **work with others**, which involves:

- Appreciate the purpose of group work

- Taking notes, listening to others
  - Reaching an endpoint
- 4.4.3 You should ***successfully manage themselves and their activities***, which involves:
- Deciding on what is most important (prioritising)
  - Checking the quality of work presented for evaluation
  - Being responsive to changing circumstances
- 4.4.4 You should ***collect, analyse and organise information***, which involves:
- Getting information from different sources
  - Piecing the information together into some sense-making
  - Evaluating the goodness of the information
  - Categorising information
- 4.4.5 You should ***communicate effectively*** – either verbally, or written.
- 4.4.6 You should ***use technology effectively and critically***, which involves:
- Utilising technology to solve daily academic problems
  - Interpreting the science behind the technology
  - Recognising the broader impacts of using the technology
- 4.4.7 You should be able to ***learn from experience***.
- 4.4.8 You should be ***culturally sensitive***.

## Sample Unit Description

<b>UNIT 1:</b>	<b>COMMUNICATIONS AND NETWORKS</b>
<b>Specific Outcomes</b>	<p>On completion of this learning unit, should be able to:</p> <p>Explain connectivity, the wireless revolution, and communication systems</p> <p>Describe physical and wireless communication channels</p> <p>Differentiate between connection devices and services including dial-up, DSL, cable, satellite, and cellular</p> <p>Describe data transmission factors, including bandwidth and protocols</p> <p>Define networks and key network terminology including network interface cards and network operating systems</p> <p>Describe different types of networks, including local, home, wireless, personal, metropolitan, and wide area networks</p> <p>Describe network architectures, including topologies and strategies</p> <p>Explain the organization issues related to Internet technologies and network security</p>
<b>Estimated Duration</b>	1 week
<b>References:</b>	Chapter 8 of the prescribed textbook

### Summative Assessment tasks

#### *Requirements for the first presentation*

In groups of ten, prepare a presentation to demonstrate understanding of the following chapters, 1) communications and networks, and 2) privacy, security, and ethics. In your preparation make sure your presentation takes care of the stated learning outcomes for each chapter.

## Marking criteria

### First Presentation

Group Members	<b>COMMUNICATIONS AND NETWORKS &amp; PRIVACY, SECURITY AND ETHICS</b>	<b>Marks Allocated [80]</b>	<b>Marks obtained</b>
	The overall presentation design and discussion	10	
	Explain connectivity, the wireless revolution, and communication systems	3	
	Describe physical and wireless communication channels	4	
	Differentiate between connection devices and services including dial-up, DSL, cable, satellite, and cellular	5	
	Describe data transmission factors, including bandwidth and protocols	4	
	Define networks and key network terminology including network interface cards and network operating systems	4	
	Describe different types of networks, including local, wireless, metropolitan, and wide area networks	4	
	Describe network architectures, including topologies and strategies	4	
	Explain the organization issues related to Internet technologies and network security	4	
		Identify the most significant concerns for effective implementation of computer technology	2
Discuss the primary privacy issues of accuracy, property, and access		6	
Describe the impact of large databases, private networks, the Internet, and the web on privacy		4	
Discuss online identity and the major laws on privacy		4	

	Discuss cybercrimes including creation of malicious programs such as viruses, worms, Trojan horses, and zombies as well as denial of service attacks, Internet scams, identity theft, cyberbullying, rogue Wi-Fi hotspots, and data manipulation	6	
	Detail ways to provide computer security including restricting access, encrypting data, anticipating disasters, and preventing data loss	4	
	Discuss computer ethics including copyright law, software piracy, digital rights management, the Digital Millennium Copyright Act, as well as plagiarism and ways to identify plagiarism	12	

<b>Group Members</b>	<b>COMMUNICATIONS AND NETWORKS &amp; PRIVACY, SECURITY AND ETHICS</b>	<b>Marks Allocated [100]</b>	<b>Marks obtained</b>
	The overall presentation design and discussion	10	
	Explain the functional view of an organization and describe each function	5	
	Describe the management levels and the informational needs for each level in an organization	6	
	Describe how information flows within the organization	2	

	Describe computer-based information systems	2	
	Distinguish among a transaction processing system, a management information system, a decision support system, and an executive support system	8	
	Distinguish between office automation systems and knowledge work systems	2	
	Explain the difference between data workers and knowledge workers	2	
	Define expert systems and knowledge bases	4	
	Distinguish between the physical and logical views of data	4	
	Describe how data is organized: characters, fields, records, tables, and databases	5	
	Describe key fields and how they are used to integrate data in a database	4	
	Define and compare batch processing and real-time processing	4	
	Describe databases, including the need for databases and database management systems (DBMSs)	8	
	Describe the five common database models: hierarchical, network, relational, multidimensional, and object-oriented	5	

	Distinguish among individual, company, distributed, and commercial databases	3	
	Describe strategic database uses and security concerns	2	
	Describe the six phases of the systems life cycle	12	
	Identify information needs and formulate possible solutions	2	
	Identify, acquire, and test new system software and hardware	4	
	Switch from an existing information system to a new one with minimal risk	2	
	Perform system audits and periodic evaluations	2	
	Describe prototyping and rapid applications development	2	

## Appendix B – Informed Consent Document

Dear Prospective Participant,

My name is Siyabonga Pika. I am a student (Student Number 215081619) studying towards a Masters' degree in Higher Education (Teaching and Learning) at the University of KwaZulu-Natal, Howard College Campus. The title of my research is: **The flipped classroom approach in large class settings at Walter Sisulu University**. The aim of the study is to gather and reflect data on your experiences and views about the flipped classroom as a teaching method in a large second year Business Information Systems class at Walter Sisulu University. I will request you to fill an online survey as well as interview some of you as a way of sharing your experiences on the subject.

Please note that:

- The information that you provide will be used for scholarly research only.
- Your participation is entirely voluntary. You have a choice to participate, not to participate or stop participating in the research. You will not be penalized for taking any action.
- Your views in this study will be presented anonymously. Neither your name nor identity will be disclosed in any form in the study.
- The study will take about six month. However, you will be required to provide feedback after completing the two main assessment tasks we will use for duty performance (*DP*).
- The record as well as other items associated with the group discussions will be held for a period of 5 years, in line with the rules of the university. Hardcopies will be destroyed by shredding and softcopies will be deleted and emptied from the computer device's recycle bin.
- If you agree to participate please sign the declaration attached to this statement.

I can be contacted at: Department of Accounting, Walter Sisulu University, Butterworth Campus. Email: [sphika@wsu.ac.za](mailto:sphika@wsu.ac.za); Cell: 073 694 0892;

My supervisor is Dr. Sarasvathie Reddy who is located at the School of Social Sciences, Howard College Campus, Durban of the University of KwaZulu-Natal. Contact details: email [Reddys15@ukzn.ac.za](mailto:Reddys15@ukzn.ac.za), Phone number: 03126032415.

The Humanities and Social Sciences Research Ethics Committee contact details are as follows: Ms Phumelele Ximba, University of KwaZulu-Natal, Research Office, Email: [ximbap@ukzn.ac.za](mailto:ximbap@ukzn.ac.za), Phone number +27312603587.

Thank you for your contribution to this research.

### DECLARATION

I..... (*Full names of participant*)  
hereby confirm that I understand the contents of this document and the nature of the research project, and I consent to participating in the research project.

I understand that I am at liberty to withdraw from the project at any time, should I so desire. I understand the intention of the research. I hereby agree to participate.

I consent / do not consent to have this interview recorded (if applicable).

By providing the email address in the space provided below, I indicate my interest to receive feedback

SIGNATURE OF PARTICIPANT      DATE                      EMAIL

.....

## Appendix C – Sample Lesson Plan

<b>LESSON PLAN Ref:</b>	<b>DAY 8</b>	<b>Course Ref:</b>	<b>BIS10B1/EBIS1B1</b>
<b>Subject / Course:</b>	<b>BUSINESS INFORMATION SYSTEMS</b>		
<b>Topic:</b>	<b>INFORMATION SYSTEM IN ORGANIZATIONS</b>		
<b>Lesson Title:</b>	<b>TYPES OF COMPUTER-BASED INFORMATION SYSTEMS</b>		
<b>Level:</b>	<b>Intermediate</b>	<b>Lesson Duration:</b>	<b>90 minutes</b>
<b>Lesson Objectives:</b>			
<p>Explain common departments in an organization and different levels of management</p> <p>Describe how the information flows within an organization</p> <p>Distinguish among the different types of computer-based information systems</p>			
<b>Summary of Tasks / Actions:</b>			
<p>Allow students to form groups of 10 and write a short report of: (45 minutes)</p> <p>1) Five common departments found in organizations</p> <p>2) Types of computer-based information systems</p> <p>Class discussion (45 minutes)</p>			
<b>Materials / Equipment:</b>			
Refer to the issued handout and my blendspace			
<b>References:</b>			
Prescribed book			
<b>Take Home Tasks:</b>			
<p>Watch videos from YouTube and my blend space or use any sources from the Internet and write short notes about databases. In your discussion explain how data is organized; the difference between batch processing and real-time processing; the difference between the physical and logical views of data.</p> <p>My blend space is <a href="https://www.tes.com/lessons/GZ0qPBy3hQqOGw/information-systems-in-an-organization">https://www.tes.com/lessons/GZ0qPBy3hQqOGw/information-systems-in-an-organization</a></p>			

## Appendix D – Questionnaire

21/03/2016

The flipped classroom approach in large class settings at WSU

### The flipped classroom approach in large class settings at WSU

\*Required

#### Questionnaire

---

The purpose of this questionnaire is to help me understand your experience of the flipped learning approach as it is applied in your Business Information Systems' theory classes. The flipped learning approach is the teaching strategy that I used to teach the last three chapters where case studies, small group discussions and videos were used.

Participation is voluntary and is not in any way linked to your marks. The data collected will be used for research purposes only, to help me improve my future teaching practice and to complete my current studies. Although this questionnaire submission will reflect your email addresses, they will not be shared with anyone and will not be used for any other purpose. I have received written permission from the institution to conduct this research, and you have the right not to participate, or to terminate your participation at any given time.

Please answer all questions as accurate as possible

**1. Gender: \***

Mark only one oval.

- Male  
 Female

**2. Please select your course code**

Mark only one oval.

- BIS10B1 (for students registered for the Main stream programme)  
 EBIS1B1 (for students registered for the Extended programme)

**3. Age \***

Mark only one oval.

- 15 - 19  
 20 - 25  
 26 - 35  
 Over 35

#### Your flipped learning experience

The questions that follow will be in a 5 point scale where numbers 1 to 5 represent, 1 - Strongly Agree, 2 - Agree, 3 - Neither agree nor Disagree, 4 - Disagree, and 5 - Strongly Disagree.

[https://docs.google.com/forms/d/1R\\_X3qGsMwOxggPpiDJDPPiYes8Zsciw3yiGGv7UkWGgA/edit?usp=drive\\_web](https://docs.google.com/forms/d/1R_X3qGsMwOxggPpiDJDPPiYes8Zsciw3yiGGv7UkWGgA/edit?usp=drive_web)

1/4

**4. The flipped learning approach helped me build arguments, discussions, and debates in given topics \****Mark only one oval.*

1      2      3      4      5

Strongly Agree                  Strongly Disagree

**5. The flipped learning approach helped me recognise the theoretical differences and clashes in the given scenarios \****Mark only one oval.*

1      2      3      4      5

Strongly Agree                  Strongly Disagree

**6. The flipped learning approach helped me share ideas with others about relevant topics \****Mark only one oval.*

1      2      3      4      5

Strongly Agree                  Strongly Disagree

**7. The flipped learning approach helped me understand the teaching materials and resources targeted toward solutions \****Mark only one oval.*

1      2      3      4      5

Strongly Agree                  Strongly Disagree

**8. The flipped learning approach motivated me to attend BIS classes frequently \****Mark only one oval.*

1      2      3      4      5

Strongly Agree                  Strongly Disagree

**9. The flipped classroom approach motivated me to engage more in class activities \****Mark only one oval.*

1      2      3      4      5

Strongly Agree                  Strongly Disagree

16. **The flipped learning approach motivated me to collect, analyse and organise information \***

Mark only one oval.

1      2      3      4      5

Strongly Agree                  Strongly Disagree

17. **The flipped learning approach helped me communicate effectively \***

Mark only one oval.

1      2      3      4      5

Strongly Agree                  Strongly Disagree

18. **The flipped learning approach helped me improve my computer literacy skills \***

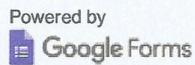
Mark only one oval.

1      2      3      4      5

Strongly Agree                  Strongly Disagree

### You have reached the end of the questionnaire

Thank you very much for taking your time to complete this questionnaire. Your contribution is very much appreciated.



## Appendix E – Focus Group Questions

### Focus Group Discussion Schedule (15 September 2016) – 4 hour discussion

The research question and the sub-questions were introduced to the participants and participants were given twenty minutes to write down their answers to the three critical research questions as outlined below:

1. How did you experience learning through a flipped classroom teaching method in a large BIS class at WSU?
2. Why did you experience learning through a flipped classroom teaching method in the way that they did?
3. Did any of the following factors contribute to the way you experienced flipped classroom? If yes, please explain how?
  - a. The institution
  - b. Your personal character
  - c. Course content
  - d. Technology
  - e. The lecturer
  - f. Learning support

After writing their answers to the three questions above, I initiated the discussion using the questions below as the guideline:

Topic	Estimated Time
1) In what ways was the flipped classroom approach different to the normal lecture method?	10 minutes
2) How did you feel about the need to learn the new concepts on your own?	10 minutes
3) How did you feel about the need to engage in class discussions about the topics the lecturer has not taught before?	10 minutes
4) What did you like most about the flipped classroom approach?	10 minutes
5) What did you dislike about the flipped classroom approach?	10 minutes
6) How did you access the online resources out of the class time?	10 minutes
7) What recommendations can you give for the betterment of the flipped classroom approach in large class settings at WSU	20 minutes
8) Is there anything that you would like to add?	10 minutes

## Appendix F - Timetable

**Walter Sisulu University**  
**Faculty of Management Science**

**Timetable**

**1<sup>st</sup> Semester, 2016**

### **BIS10B1/EBIS1B1**

	1	2	3
TIME	08:00 09:25	09:30 11:10	11:15 13:25
MON		BIS10B1/EBIS1B1 AT09/AG17	
WED			BIS10B1/EBIS1B1 Auditorium
FRI	BIS10B1/EBIS1B1 Auditorium		

## Appendix G – Assessment Criteria for Group work Assessment

Outcomes	Criteria for competent assignment
<ul style="list-style-type: none"> <li>• Work in a team</li> </ul>	<ul style="list-style-type: none"> <li>• Demonstration of team work through attendance registers</li> <li>• Equal group participation in attempt to meet assignment requirements</li> <li>• Group members have common understanding of assignment contents (this can be proven in oral presentations)</li> </ul>
<ul style="list-style-type: none"> <li>• Collect, analyse and evaluate information</li> </ul>	<ul style="list-style-type: none"> <li>• Information presented is in students' vocabulary</li> <li>• Sources are referenced correctly</li> <li>• Presented information is clear and corresponding to the topic</li> <li>• Presented information is logical and relevant</li> </ul>
<ul style="list-style-type: none"> <li>• Use Information and Communication Technology (ICT)</li> </ul>	<ul style="list-style-type: none"> <li>• Online sources are referenced</li> <li>• Typed assignment is neat and appropriate formatting is used</li> <li>• Presentation slides are compiled in MS-PowerPoint</li> </ul>
<ul style="list-style-type: none"> <li>• Organize and manage themselves</li> </ul>	<ul style="list-style-type: none"> <li>• Conflict among group members is resolved</li> <li>• The group meets deadlines</li> <li>• The group finishes the entire presentation within scheduled time</li> </ul>
<ul style="list-style-type: none"> <li>• Explain how information systems are developed and the role of end-users in the system development process</li> </ul>	<ul style="list-style-type: none"> <li>• The group understands when feasibility analysis is undertaken in system development process and who the sources of information are</li> <li>• The main topics in the feasibility report are discussed:               <ul style="list-style-type: none"> <li>○ Assessment of existing business systems</li> <li>○ Purpose and goals of the new system</li> <li>○ The business environment</li> </ul> </li> </ul>

	<ul style="list-style-type: none"><li>○ Systems integration</li><li>○ Human, technical and legal constraints</li><li>○ Costs and return on investment</li><li>○ Assessment of alternative solutions</li></ul>
--	---

**In addition to the above criteria, students will be awarded for providing evidence of innovation and creative thinking.**

## Appendix H - Ethical Clearance Certificate



06 July 2016

Mr Siyabonga Theophilus Pika 215081619  
School of Higher Education Teaching and Training  
Howard College Campus

Dear Mr Pika

Protocol reference number: HSS/0592/016M

Project Title: The flipped classroom approach in large class settings at Walter Sisulu University

### Full Approval – Expedited Application

In response to your application received 19 May 2016, the Humanities & Social Sciences Research Ethics Committee has considered the abovementioned application and the protocol has been granted **FULL APPROVAL**.

Any alteration/s to the approved research protocol i.e. Questionnaire/Interview Schedule, Informed Consent Form, Title of the Project, Location of the Study, Research Approach and Methods must be reviewed and approved through the amendment /modification prior to its implementation. In case you have further queries, please quote the above reference number.

**PLEASE NOTE:** Research data should be securely stored in the discipline/department for a period of 5 years.

The ethical clearance certificate is only valid for a period of 3 years from the date of issue. Thereafter Recertification must be applied for on an annual basis.

I take this opportunity of wishing you everything of the best with your study.

Yours faithfully

Dr Shenuka Singh (Chair)  
Humanities & Social Sciences Research Ethics Committee

/pm

Cc Supervisor: Dr Saras Reddy  
Cc Academic Leader Research: Dr SB Khoza  
Cc School Administrator: Ms Tyzer Khumalo & Ms B Bhengu

Humanities & Social Sciences Research Ethics Committee

Dr Shenuka Singh (Chair)

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