STUDENTS' MOTIVATION, PERSPECTIVES, AND LEARNING IN FLIPPED UNIVERSITY CLASSROOMS

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UNIVERSITY CLASSROOMS

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Abstract: The flipped classroom, introduced by Jonathan Bergmann and Aaron Sams in 2008, has been a popular instructional strategy that promotes active learning. In a flipped classroom, the learning content is provided to students before class, and class time is dedicated to engaging students in student-centered activities that reinforce and integrate the knowledge. This dissertation aims to explore the relationship between motivation and students' perspectives, learning performance, and use of online course materials in flipped classrooms. Fifty-nine undergraduate students enrolled in flipped classes completed a survey soliciting their motivation, as defined by the Expectancy-Value theory, and their perceptions of the flipped course. Students' expectancy beliefs (control beliefs about learning, self-efficacy) and value beliefs (task value, intrinsic motivation, extrinsic motivation) were measured by subscales adopted from Motivated Strategies for Learning Questionnaire (MSLQ). Students' final grade percentage represented their learning performance. Brightspace log data were obtained to evaluate students' use of online materials. Results indicated that motivation had an effect on students learning in flipped classroom environments. Students have similar motivation patterns regarding their learning performance in flipped classrooms as in traditional or online classrooms. Regression analyses indicated self-efficacy is a significant predictor of both students' academic achievement and perceptions of the flipped classroom. Overall, students had positive attitudes towards the flipped model but indicated neutral attitudes when asked if they wished more instructors used the flipped classroom model. This study adds to the literature for understanding students' motivation in flipped educational settings and suggests implications for effective teaching in a flipped classroom. Although the flipped classroom may change the teacher's role from "sage on the stage" to a "guide on the side," (King, 1993) the teacher's role in the learning environment remains vitally important.

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CHAPTER I

INTRODUCTION

The need for active learning has been recognized in the past decades and as a result, new innovative instructional models have gathered educator's attention. Learning is a process of active construction of information by the learner rather than passively receiving content that the instructor delivers to learner (Hoidn, 2016). Active learning emphasizes students' knowledge acquisition with an active role in the knowledge internalization process that related to prior knowledge rather than passively receiving information, such as having solely a lecture and note-taking class. With the rapid evolution of advanced technology, asynchronous learning and online education are providing educators more options to facilitate active learning. While compared to face-to-face learning environments, online learning is very attractive due to its flexibility (Richardson & Swan, 2003) and further opportunities to enhance course materials through multimedia. One innovative instructional strategy that takes advantage of flexible asynchronous learning is the flipped classroom model. Flipped learning introduces students to content materials before class and leaves class time for activities. This fosters

in-depth and active learning by having direct instruction before the class meets, which in turn, will maximize the in-class time with student-centered learning activities (Hamdan, McKnight, McKnight, & Arfstrom, 2013) such as collaborative learning, peer tutoring, and problem-based or inquiry-oriented case studies. Rogers (1969) conceived that when students are able to use what they learn to perform a task; the learning will be more active. Flipped classroom learning is an active learning that is "done with the expectation of using the material" for in-class activities (Benware & Deci, 1984).

The flipped classroom approach allows students to use "technology to access the lecture and other instructional resources outside the classroom in order to engage them in active learning during in-class time" (Giannakos, Krogstie, & Chrisochoides, 2014, p. 23). It requires students to independently learn materials and knowledge with experience before coming to class, and allows instructors to arrange interactive activities like problem-solving projects to further emphasize learning concepts and clear up misunderstandings during class meeting time.

Although there is not a fixed model for a flipped classroom, the core idea is to flip the traditional face-to-face teaching approach and integrate before class instructional materials and in-class learning activities into an overall approach (Tucker, 2012). High school chemistry teachers Jonathan Bergmann and Aaron Sams first tried this instructional approach in 2008 (Bergmann & Sams, 2012), later instructors, teacher trainers, and institutions adopted it across the world.

Along with the prevalence of practice, there has been an increasing publication trend in the topic of flipped learning since then (Bishop & Verleger, 2013). As shown in figure 1, a search result from Social Sciences Citation Index (SSCI) database illustrated that the

publication records about flipped learning have been continuously increasing over the past 5 years from two records in 2012 to 84 records in 2017. Research about flipped learning so far has focused on the philosophy and methodology behind the course design, the value and drawback of performing this new type of learning transformation process, and students' general attitudes toward it (e.g., Gilboy, Heinerichs, & Pazzaglia, 2015; Kim, Kim, Khera, & Getman, 2014; McLaughlin et al., 2014). The results of early studies have shown that the majority of students have positive perceptions of the flipped classroom (Love, Hodge, Grandgenett, & Swift, 2014; Pierce & Fox, 2012; Roach, 2014; Smith, 2013), and their learning performance as measured by course grades was improved for the flipped instructional design compared to traditional classroom (Pierce & Fox, 2012; Tune, Sturek, & Basile, 2013). Despite certain advantages of the flipped classroom model of instruction, research has also shown negative perspectives towards it. Some students perceived flipped learning as being very time consuming, overloaded with extra work, and requiring students to teach themselves (Smith, 2013; Thompson, Xiu, Tsotsoros, & Robertson, 2018; Tune et al., 2013; Zusho, Pintrich, & Coppola, 2003). Students' motivation influences their willingness to participate in classroom activities, which in turn, could impact the efficiency and successfulness of flipped classroom model (Yilmaz, 2017). To better examine the effectiveness of the flipped design, it is important to know how motivation influences students learning in a flipped learning environment.

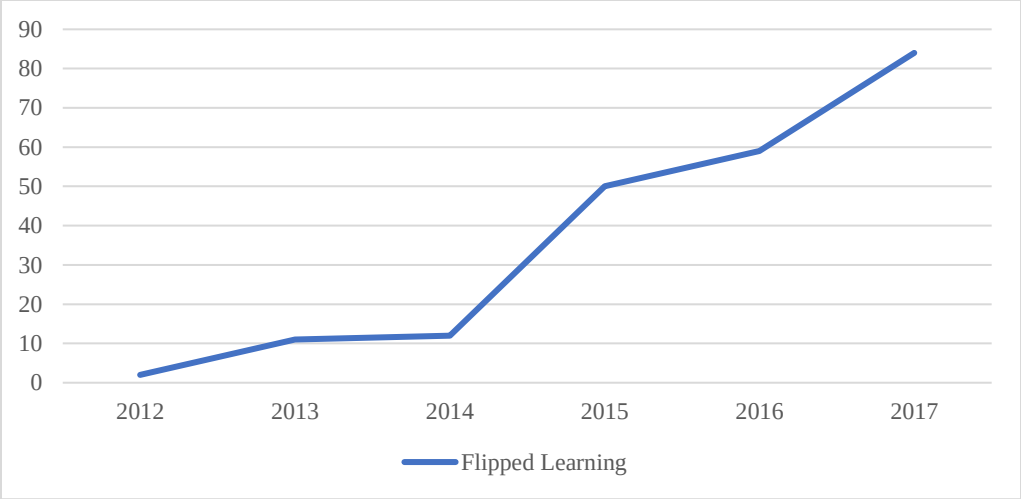

Figure 1. Publication Records about Flipped Classroom in SSCI Database

Mitchell (1992) found that motivational beliefs had a critical effect on students' learning performance and behaviors and were crucial to students' academic success and learning outcomes. Research concludes that students' perceptions of motivation are positively related to their learning behavior and are predictive of learning performance at a significant level (Christophel, 1990). Students with positive motivational beliefs (e.g., high intrinsic motivation, high self-efficacy) are expected to use more active cognitive strategies, perform deeper processing of information, and, consequently, show higher academic achievement (Pintrich & De Groot, 1990). Highly motivated students are frequently attentive and easily comply with learning activities, and they are systematic in the management of their learning efforts (Elliot & Dweck, 2013). These students also use learning strategies to facilitate and monitor their learning (Zimmerman, 1989). Motivational beliefs are powerful predictors of students' learning and performance; at the same time, what students are learning can also influence their motivation in return (Zusho et al., 2003). Students' motivation is very unpredictable and changeable, subject to differentiated learning environments and opportunities (Keller, 1987). The flipped classroom model is an innovative instruction

method with limited research explaining the impact of motivation in this model. It remains unknown if the same motivation patterns exist in flipped classrooms as in purely face-to-face or online learning environments.

Research Problem Statement

Students' learning performance and behaviors are influenced by their goals, motivation, and attitudes (Ames, 1992). Motivation is one personal variable that may help explain who engages and who does not in a flipped environment. The purpose of this study was to gather quantitative data and explore the relationship between motivation and students' perspectives, performance, and use of course materials in flipped learning environments.

Theoretical Framework

Educators believe that students' learning performance and experiences are influenced by their personal and cultural beliefs. Motivation provides reasons underlying the process and behavior "whereby goal-directed activity is instigated and sustained" (Schunk, Meece, & Pintrich, 2013, p. 4). Students' motivation in the classroom context can be used to investigate students' willingness, subjective experiences, and reasons behind their performance, which are connected to their actions and effort engaged in learning activities (Brophy, 2013). While there are several theories of motivation, this study uses the expectancy-value theory of motivation (Wigfield & Eccles, 2000) for its theoretical framework. From this perspective, motivation is about students' beliefs of expectancy and value, which has a profound influence on students' general attitudes towards learning activities.

Expectancy–value theory aims to explain the reasons behind individual achievement performance and choices from the aspect of expectancy and subjective values. Expectancy relates to individuals' expectations and confidence about their success on a task and how well

they believe they can perform an activity within their abilities. Individuals may be capable of doing an activity but are not willing to do it. On the other hand, subjective task values consider the beliefs and reasons that influence individuals' choices about engaging in an activity. Subjective task values include individual beliefs such as intrinsic value, extrinsic value, and other values that an activity may bring and the cost of doing it.

Expectancy–value theory addresses the way students' beliefs affect how well they do different tasks and how much they value the tasks as related to their learning choice, persistence, and performance (Atkinson, 1964; Eccles, 1983; Eccles & Wigfield, 2002; Wigfield, 1994; Wigfield & Eccles, 1992). Modern expectancy-value theories (e.g., Eccles, 1983; Wigfield, 1994; Wigfield & Eccles, 1992) are based in Atkinson's (1964) expectancy-value model but elaborated more on both expectancy and value beliefs and assumed those components are connected in a positive relationship with each other (Eccles & Wigfield, 2002). Eccles and Wigfield (2002) assumed that expectancy-related and task-value beliefs have a direct influence on achievement choices and performance. The modern expectancy–value model of achievement motivation was first proposed by Eccles (1983) and since then has been continuously studied and developed. The model centers on the achievement-related choices with a broad scope that covers different social cognitive constructs. Those constructs have a direct or indirect influence on students' achievement-related choices, such as learning goals, previous related experience, or value beliefs (Wigfield & Eccles, 2000). The expectancy–value model links people's behaviors, choices, and persistence most directly to individuals' expectancy and value beliefs, such as self-efficacy, control of learning, intrinsic motivation, extrinsic motivation, and task value. Wigfield and Eccles (2000) argued that these constructs are the most immediate predictors of people's performance, which are

themselves influenced by a variety of internal and external factors (e.g., Eccles & Wigfield, 1995).

The components of expectancy and value constructs represent students' perspective about their beliefs of ability, reasons for participation, and feelings of the activity. In the expectancy-value theory, both expectancy and value components are defined in rich ways and are connected with other broader psychological, social, and cultural determinants. The expectancy component covers students' expectancies for purposeful initiated action, competence and efficacy about their abilities, and sense of control over outcomes (Eccles & Wigfield, 2002). On another note, the subjective value relates to students' beliefs about the reasons to perform a task (Eccles & Wigfield, 2002).

Research suggests that the motivational components of expectancy and value are usually positively associated with self-regulated learning components (Pintrich & De Groot, 1990). For example, a highly motivated student would be inclined to value the task as important, be more likely to engage in higher order thinking or metacognitive learning activities, use more cognitive study strategies, and have a better sense for managing learning effort (e.g., Ames & Archer, 1988; Nolen, 1988). Based on the expectancy-value model (Eccles, 1983; Eccles & Wigfield, 2002), motivational beliefs that directly influence students' achievement choices will be discussed in this study. Chapter Two of this dissertation includes a more detailed discussion of the motivational beliefs measured in this study guided by the expectancy-value theory.

Methodology

Based on an objectivist epistemology and post-positivism theoretical perspective, this study uses statistical methods and quantitative data to explore whether students' motivational

characteristics relate to their learning experience and behaviors in a flipped classroom. Objectivists believe that reality exists and objects have meanings; human beings need to discover and recognize it (Crotty, 1998). The researcher would never know the actual truth but can make progress through research. According to the principle of falsification (Popper, Miller, & Popper, 1985), before other objective evidence comes out to falsify the conclusion, the researcher should take the current one as the tentative truth. In this design, the researcher uses the post-positivist theoretical perspective to support the quantitative data collection and data analysis process.

The purpose of this study is to explore whether there are differences in students' perspectives and learning toward the flipped course design associated with different motivational beliefs. The author proposed four research questions based on theories, literature review, and previous research. The literature review chapter of this dissertation explicitly gives reasons about why there is a need to examine the relationship between students' motivation, perspectives, and learning performance. The researcher collected the authentic data through self-reported surveys and used logical reasoning to draw a provisional conclusion based on inductive and deductive data analysis. Through the process, the researcher tried her best to exclude bias, get objective information, and generalize findings through scientific data analysis. At the end of the semester, a questionnaire was printed and delivered by the researcher to students during the actual class time, and participants were asked to respond about their motivation and perspectives on the flipped course. The questionnaire scales are adapted from existing published studies, which have been shown to have acceptable reliability and validity in previous studies.

The variables of motivational beliefs were measured by Motivated Strategies for Learning Questionnaire (MSLQ) (Pintrich, Smith, Garcia, & McKeachie, 1991) in this study, namely self-efficacy, control of learning, intrinsic motivation, extrinsic motivation, and task value (Eccles & Wigfield, 2002). The theoretical framework of expectancy-value theory provides the basis for MSLQ (Pintrich & De Groot, 1990), which is a valid and highly reliable instrument based on the premise that students' motivation is dynamic due to various curriculum subjects, learning environments, and learning tasks (Pintrich et al., 1991). The MSLQ instrument carries a high reliability and validity score and has been translated into different languages to examine students' motivation and learning strategies (Duncan & McKeachie, 2005). Researchers used the MSLQ to study the relationship between motivation overall or particular motivational beliefs, such as self-efficacy, intrinsic motivation, and extrinsic motivation with other variables related to social behaviors, learning performance, and satisfaction (Duncan & McKeachie, 2005). In this study, the author used motivational subscales of the MSLQ to understand students' motivational beliefs and their relationship with students' learning performance, use of course materials, and general views about the flipped classroom. The specific research questions were listed as followed:

1) Do students' motivational characteristics, as measured by the MSLQ, have a relationship with learning performance in a flipped undergraduate class?
2) Do students' motivational characteristics, as measured by the MSLQ, have a relationship with students' use of course materials in a flipped undergraduate class?
3) Do students' motivational characteristics, as measured by the MSLQ, have a relationship with students' perspectives on a flipped undergraduate class?

4) Do differences in how instructors implement flipped learning influence how students respond to a flipped learning classroom, in terms of students' motivational characteristics, learning performance, use of course materials, and perspectives on a flipped undergraduate class?

Operational Definitions of Terms

Motivation. Motivation refers to the attribute that 'moves' people to do or not do something (Gredler, 2001).

Flipped Classroom. Flipped classroom approach requires "students use technology to access the lecture and other instructional resources outside the classroom in order to engage them in active learning during in-class time" (Giannakos et al., 2014, p. 23).

MSLQ. The Motivated Strategies for Learning Questionnaire is an 81-item, self-report Likert-type scale instrument consisting of six motivation subscales and nine learning strategy scales, originally designed and developed by Pintrich et al. (1991). In this study, the researcher only used five motivation subscales to measure students' motivational beliefs.

Expectancy. Expectancies for success is defined "as children's beliefs about how well they will do on upcoming tasks, either in the immediate or longer term future" (Wigfield & Eccles, 2000, p. 70)

Self-efficacy. Bandura (1994) defined self-efficacy as "people's beliefs about their capabilities to produce designated levels of performance that exercise influence over events that affect their lives" (p.72).

Control Beliefs about Learning. Control of learning is related to students' beliefs that outcomes are contingent and positive upon one's own effort, rather than external factors such as the teacher or luck (Garcia & Pintrich, 1996).

Intrinsic Motivation. Intrinsic motivation is generally referred to as doing an activity for its inherent interests, satisfaction, or enjoyment, which leads to high-quality learning and creativity (Ryan & Deci, 2000).

Task Value. Task value refers to students' judgment and feelings of the task, which includes interest, importance, and usefulness (Garcia & Pintrich, 1996).

Learning Performance. In this study, students' learning performance was measured by their final total grade excluding bonus points that were not related to learning effort, such as points awarded for completing a survey. The final grade percentage was calculated and used to control for differences in total possible points between the two flipped courses.

Use of course materials. Students' online course material usage was represented by analyzing learning management system - Brightspace - "log data" (e.g. time spent, number of resources accessed, etc.). The Brightspace log data provided an objective measurement of their learning engagement.

Importance of the Study

This project advances understanding of how students' expectancy and value beliefs affect or relate students' performance and opinions in a flipped classroom. The significance of the results will be discussed and implications will be provided for further understanding of students' motivation in flipped classroom settings.

The limited amount of research in the area makes this study one of particular importance to the literature. This research is useful to the education community at large, as scholarly literature on flipped learning has only emerged recently. The flipped instructional model will continue to hold an important role in teaching innovations for the near future. The findings of this paper will provide some evidence-based information that will help course

designers and instructors understand how different students respond to flipped learning, in order to design experiences that benefit more students.

Delimitations

This dissertation has used purposive sampling methods to select undergraduate flipped courses where the researcher was granted access to collect research data. This study focuses on the flipped classroom, and will not consider other factors that may influence students' motivational beliefs, learning engagement and performance, or students' perspectives towards the course. The effect of instructional design, course subject, class size, students' expectations, learning skills, and teachers' roles on flipped classroom will not be discussed in this dissertation.

Summary

This chapter gives a brief introduction to the research topic and suggests there is a need to extend current research on students' motivational impacts in the flipped instructional environments. The goal of this study was to explore the relationship between motivation and students' perspectives, performance, and use of course materials in flipped learning environments and to fulfill one research gap in the field. The epistemology of objectivism and post-positivism theoretical perspectives provide theoretical groundings, justification, and criteria to inform this research. The findings of this study will assist instructors and course designers in the flipped instructional environments.

Overview

The information provided above is the introductory chapter of this dissertation. The remainder of this dissertation will continue accordingly: Chapter Two discusses a literature review including the expectancy-value theory, existing research findings, and the research

gap to be addressed in the design; Chapter Three describes detailed research methods of the study; Chapter Four presents the findings and results from analyzing collected data; Chapter Five summarizes the conclusion, discussion, and implications of this dissertation.

CHAPTER II

LITERATURE REVIEW

In this literature review chapter, the researcher synthesized the literature that relates to the present study. Reviewed literature covers one of many motivational theories, the expectancy-value theory, motivation in a traditional classroom, motivation in the online classroom, and a synthesis of the flipped instructional model. This study examines the relationship between students' motivation with their learning performance and opinions in a flipped environment. The purpose of this chapter is to review and summarize the existing research and identify the literature gap.

Expectancy-value Theory

There are many theories that explain the influence of motivation on students' choice, persistence, and performance of tasks (Wigfield & Eccles, 2000). The expectancy–value model (e.g., Eccles, 1983; Eccles, 1987; Feather, 1988; Wigfield & Eccles, 1992) is one of the theories that concentrate on beliefs, values, and goals that relate to people's purposeful actions and behaviors. It links achievement performance, persistence, and choice most directly to individuals' expectancy-related and task-value

beliefs (Eccles & Wigfield, 2002). The modern expectancy-value theory (Eccles, 1983) is based in Atkinson's (1964) expectancy-value model and focuses on explaining motivational beliefs associated with performance and behaviors (Wigfield, Tonks, & Klauda, 2009). Eccles and Wigfield (2002) elaborated more on expectancies and values beliefs with a broader link to psychological and social determinants. This literature review discussed expectancy-value model (Eccles & Wigfield, 2002), focusing on a portion of the model, specifically the constructs of expectation of success and subjective task values that have a direct influence on the achievement choices and performances.

Expectancies in motivation refer to students' beliefs about how they will perform and accomplish on each individual task immediately or in the future (Eccles & Wigfield, 2002). Two of the most common expectancy beliefs are self-efficacy and control beliefs about learning. Self-efficacy is a self-judgment about one's competence to master a task and to feel confident about being capable of accomplishing and performing it (Garcia & Pintrich, 1996). Bandura (1994) defined self-efficacy as "people's beliefs about their capabilities to produce designated levels of performance that exercise influence over events that affect their lives" (p.72). Bandura (1997) distinguished between two types of expectancy beliefs, namely outcome expectations and efficacy expectations. Eccles and Wigfield (2002) focused rather on the efficacy expectations, where students believe they have the ability to perform tasks rather than a belief in behaviors like practice or continuous repetition could produce outcomes. Self-efficacy for learning and performance is not a stable quality, but depends on the difficulty of a task, and measures students' contextual self-judgment rather than their personal characteristics (Zimmerman, 2000). Self-efficacy has proven to be sensitive to environmental context changes,

responsive to improvements in students' learning methods, and predictive of achievement outcomes (Zimmerman, Bandura, & Martinez-Pons, 1992). Students' self-perceptions of efficacy also have a close relationship to individual action, performance, and behavior, which consistently predicted students' motivation and learning in diverse situations (Zimmerman, 2000). In a word, self-efficacy is a crucial determinant of motivational beliefs, which builds students with the agency to encourage their learning by using self-regulated strategies.

There are several expectancy-based control theories as discussed by Eccles and Wigfield (2002). Locus of control theories assumed that students should have internal anticipation about success or failure in their control (Crandall, Katkovsky, & Crandall, 1965). Control beliefs about learning often relate to students' beliefs that outcomes are positive and depend upon one's own effort, rather than uncontrollable external factors such as learning tools or fortune (Garcia & Pintrich, 1996). With a broader theoretical framework, three basic psychological needs of competence, autonomy, and relatedness were linked to students' control of learning (Connell & Wellborn, 1991, as cited in Eccles & Wigfield, 2002). Students that believe they can control their achievement outcomes will feel more competent, and they will be fully engaged and motivated when the appropriate degree of autonomy is provided with a high level of involvement and relatedness activities (Eccles & Wigfield, 2002). The control theory and the self-efficacy theory deal with students' confidence to do a task successfully and take responsibility for achievement tasks.

Even when students feel confident and capable doing an activity, their reasons, willingness, and desire to perform a task could be influenced by different task qualities

and values. The value-related components in the expectancy-value model provide systematic explanations about why individuals engage in different activities. The value-related beliefs often include students' opinions about the importance and significance of the task with concerns for the incentives or reasons that students engaged in doing different learning activities (Eccles & Wigfield, 2002). Students who possess a high task value usually have a preference for more learning activity involvement (Garcia & Pintrich, 1996).

Task value relates to students' subjective judgment and feelings of the task, which includes interest, importance, and usefulness. In Eccles and Wigfield's (2002) model, four subjective task values were suggested: attainment value, interest-enjoyment value, utility value, and cost. Attainment value is conceptualized in terms of individual identities and refers to the "importance of doing well on a given task" (Wigfield et al., 2009, p. 57). With the opportunity to demonstrate oneself, Eccles and Wigfield (2002) also linked attainment value with salient aspects of one's ideal self-schema or competence in different domains, such as masculinity and femininity. Students would tend to have a high attainment value for a task that has important meaning to them, such as being able to express oneself.

Interest-enjoyment value includes students' subjective interests or enjoyment obtained from doing the tasks, which is similar to the construct of intrinsic motivation as defined by Deci and Ryan (1985). It associated with the satisfaction and happiness obtained from working on the task, which can simulate people to have a deeper engagement and longer persistence (Wigfield et al., 2009). Students' intrinsic motivation toward an academic task is associated with high value and positive thinking, such as

performance improvement, knowledge reinforcement, or curiosity of ideas (Pintrich et al., 1991). Research revealed that intrinsic learning motivation had a strong relationship to personal social factors (such as energy, friendliness, and openness) and was positively related to academic performance (Broussard & Garrison, 2004; Zsolnai, 2002).

Utility value connects to the usefulness of doing a task and the meaning of a task to a person's future plan (Gilboy et al., 2015). It is determined by the degree that the task relates to short-term or long-term goals. One task can be of great value to students but not interesting to them or bring any enjoyment. In Eccles and Wigfield's (2002) model, utility value identified more "extrinsic" reasons for doing a task, which is similar to the term of extrinsic motivation. In contrast with intrinsic motivation, "extrinsic motivation has typically been characterized as a pale and impoverished (even if powerful) form of motivation" (Ryan & Deci, 2000, p. 55). Extrinsically oriented students demonstrate concern with external causes for carrying out tasks, such as grades, rewards, or evaluation (Zsolnai, 2002). The ones with very high extrinsic motivation will tend to engage in a learning task as a means to gain other rewards. Individuals motivated by extrinsic reasons perform tasks to attain some separable outcome (Ryan & Deci, 2000). Mitchell (1992) conducted an empirical study with college students and found a positive relationship between intrinsic motivational beliefs and their grade point average. However, a negative relationship between extrinsic motivation and academic achievement was also found.

The attainment value, interest-enjoyment value, and utility value are all neutral or more of positive value to students. However, cost is one subjective value that incorporates negative value components, such as test anxiety, giving up opportunities to perform other tasks, as well as the effort cost to complete a task (Eccles & Wigfield,

2002). Cost is a critical subject that directly influences one's choices and decisions about doing the task (Eccles, 1983). Test anxiety is one of the most examined cost values in academic environments, which refers to students' anxiety, fear, and concern about taking exams. Students' expectancy and value beliefs usually have a simple positive connection with learning (e.g., Phan, 2013; Pintrich & De Groot, 1990; C.-L. Wang & Liou, 2017); however, the cost of test anxiety could be related to students' expectancies and values as well as academic performance in different ways. For instance, students with high test anxiety could spend more effort and be more persistent on tasks, on the other hand, they could also be inconsistent and avoid difficult tasks in order to avoid discomfort (Hill & Wigfield, 1984; Naveh-Benjamin, McKeachie, Lin, & Holinger, 1981). In some flipped formats where students are required to take a quiz after learning the materials on their own before coming to class, some students have test anxiety are due to not having in-class learning experiences before quizzes (Tune et al., 2013). All four value elements are essentially important and have a profound influence on choice making and overall feelings about doing a task.

The expectancy-value model (e.g., Eccles, 1983; Eccles & Wigfield, 2002) has been used widely on motivational beliefs related research. Based on the theoretical framework of expectancy-value theories (Eccles, 1983), Pintrich et al. (1991) developed the Motivated Strategies for Learning Questionnaire (MSLQ) to measure undergraduates' dynamic motivation and self-regulated learning in a college course. Pintrich and De Groot (1990) referred to task values components of the model (Eccles, 1983) while researching how positive self-efficacy and task value beliefs promote students' self-regulated behaviors. Bong (2001) attempted consolidation of self-efficacy and

expectancy-value theories (Wigfield & Eccles, 1992) by examining the relative contributions of self-efficacy beliefs and task value in predicting college students' course achievement and future course enrollment intentions. Buehl and Alexander (2005) adopted the Eccles and Wigfield model of motivation (e.g., Wigfield & Eccles, 2000) while researching the influence of the multi-dimensional configuration of beliefs on students' motivation and learning. In this dissertation, the author chose the expectancy-value model (Eccles & Wigfield, 2002) as a theoretical framework as it demonstrated that individuals' expectancy-related and task-value beliefs are assumed to be directly related to performance, persistence, and task choice. Wigfield and Eccles (1992) observed expectancies, values of task choice, and intentions emerge as predictors of students' learning performance.

Review of Motivation Research

Motivation in Traditional Learning Environments. To understand students' learning and performance in traditional face-to-face learning environments, it is important for educators to study how to increase students' persistence in completing academic activities (Wolters, 1999). Within different motivation learning related theories, the expectancy-value theory has been widely used in empirical research to examine students' learning in various environments (Phan, 2013).

Results of early studies have shown that students' motivational beliefs and adoption of learning strategies have a deep relationship with their academic performance and learning skills (e.g., Schunk et al., 2013). Phan (2013) investigated the interrelations between the self-efficacy and task value motivational beliefs, cognitive learning processes, and first-year mathematics achievement with 289 university students. The

participants completed questionnaires including subscales of self-efficacy, task value, deep-learning approach, and reflective thinking items adapted from the MSLQ, the revised Study Processing Questionnaire (R-SPQ-2F) and the Reflective Thinking Questionnaire (RTQ). Structural analyses indicated that self-efficacy expectations, task values, and prior academic achievement appeared as significantly positive effectors on mathematics achievements, which directly and indirectly accounted for approximately 60% of the variability, while cognitive learning processes had less effect. Moreover, students' subjective task values, such as homework interest, were also positively related to learning skills, such as homework management (Xu & Wu, 2013). Xu and Wu (2013) used homework interest to represent students' interest, intrinsic motivation, and general task values that related to homework. They found that homework interest and affective attitude were the most significant predictors of homework management for secondary school students at the class level. Dietrich, Viljaranta, Moeller, and Kracke (2017) broaden the expectancy-value theory research with intra-individual's learning situation and topic level and inter-individual students' levels, in which the researcher looked at differences in learning and topic level for the same student and explored differences in between individual student levels as well. Those situational measures found that task values showed positive associations on all levels, expectancies had positive effects on the learning situation and topic levels, and cost of subjective values showed small negative relationships within a topic level. Abramovich, Schunn, and Higashi (2013), in a study of the effects of educational badges on motivation, discovered that middle school students' motivations could also drive their achievement and goal earnings while learning applied

mathematics, among which extrinsic motivations had negative impacts on students' learning.

Moreover, existing empirical research has also shown that individuals' expectancy and value beliefs can influence and can predict students' academic achievement outcomes in different ways depending on various learning contexts (e.g., Steinmayr & Spinath, 2009; C.-L. Wang & Liou, 2017). Grounded in Expectancy-Value Theory, motivational beliefs of self-concept, intrinsic value, and utility value were measured and each motivational belief was found to have a positive predictive effect on students' science performance (C.-L. Wang & Liou, 2017). Separately, Liou (2017) did another study that investigated the relations between these motivational beliefs and science achievement within an international scope and discovered that in general self-concept, intrinsic value and utility value all have predictive power. Steinmayr and Spinath (2009) also examined the motivational concepts as predictors of school achievement beyond intelligence among adolescent students in a German school. They asked students to self-report their domain-specific values, ability self-perceptions, goals, and achievement motives. Among those, students' ability self-concepts were used to represent their expectations beliefs. Students' Intrinsic value, importance, and utility values were measured to reveal their task value beliefs. They performed hierarchical regression and relative weight analyses and found that the variance of students' achievement was mostly explained by ability self-concepts and values. Pintrich and De Groot (1990) performed a correlational study with 173 participants and concluded that self-efficacy and test anxiety were the two motivational beliefs that best predicted

learning performance. Students who reported themselves with high intrinsic motivation, self-efficacy, and control of learning beliefs tended to do well in their final course grades.

Furthermore, motivation also affects students' self-regulation, cognitive engagement, and learning processes, such as deep learning and reflections (e.g., Inaltun & Ateş, 2015). Zusho et al. (2003) tested how students' motivation level and cognitive and self-regulatory strategies usage changed over time in an introductory chemistry course, using the MSLQ and Patterns of Adaptive Learning Survey (PALS). They discovered that among motivational beliefs, students' self-efficacy expectancy beliefs, task value, and endorsement of performance goals declined over the semester. Their standardized regression model also suggested that self-efficacy expectancy beliefs and task value were the best predictors of final scores (Zusho et al., 2003). Pintrich and De Groot (1990) also discovered that self-efficacy was positively related to cognitive engagement and intrinsic motivation had a strong relationship with self-regulation and cognitive strategies but did not show a direct influence on achievement scores, after controlling for the prior achievement. Phan (2013) also found that self-efficacy and task values also had a positive relationship with cognitive process outcomes and mediated between prior academic achievement, cognitive learning, and academic achievement. Similarly, Inaltun and Ateş (2015) discovered that college students' task value and self-efficacy were positively related with their self-regulation and conceptual knowledge. Overall, existing literature has shown that students' motivational beliefs of expectancy and value have mainly positive effect and can influence academic performance, learning skills, self-regulation, cognitive engagement, and learning process in traditional classrooms. Most studies identified self-efficacy as a significant predictor of students'

learning achievements; some studies also concluded that task value and test anxiety had significant predictive power.

Motivation in Online Learning Environments. Within online settings, learners' motivation was also linked to successful learning as in traditional environments. It is essential for educators to understand students' motivation and goals in online learning environments in order to figure out what types of students are more likely to engage in and benefit from online education (Paechter, Maier, & Macher, 2010). Yukselturk and Bulut (2007) also used MSLQ to examine motivational factors and other selected variables, which might have an effect on online students' learning, and concluded that students' intrinsic goal orientation, task value, and self-efficacy were significantly positively correlated with online success as measured by three in-term assignments and the final paper examination. Miltiadou (2001) performed another study with the MSLQ, online technology self-efficacy scale (OTSES), and other scales to examine the relationship of motivational constructs with online learning success. They discovered that task value, self-efficacy, intrinsic motivation, and extrinsic motivation were significant predictors of whether students completed the online course or dropped out.

Research has shown that motivation was positively associated with students' academic achievement and course satisfaction in online learning environments (Artino, La Rochelle, & Durning, 2010; Artino Jr & McCoach, 2008). C.-H. Wang, Shannon, and Ross (2013) used the course satisfaction questionnaire (CSQ), the MSLQ, and OTSES in an online learning environment and found students who had higher motivational scores also reported, higher course satisfaction scores and higher technology self-efficacy levels, and also earned better final grades. They also discovered that gender, educational level

and previous courses had no impact on students' motivation. Puzziferro (2008) identified that within a sample of 815 online college students, the ones had a high Motivated Strategies for Learning Questionnaire (MSLQ) subscale scores were also willing to use learning strategies and received high final scores. Miltiadou (2001) concluded that self-efficacy was one of the most significant predictors of students' learning achievement. Moreover, task value, intrinsic motivation, and extrinsic motivation also emerged as significant predictors of course satisfaction.

In summary, research shows that motivation plays an important role in students' learning in both face-to-face and online environments. Different motivational beliefs may have different effects in various learning contexts, such as students may have strong intrinsic motivation for one course but have low intrinsic motivation for the other course. Some of the literature does, in fact, suggest that students' motivational beliefs were significantly positively correlated with their academic achievement (e.g. Artino Jr & McCoach, 2008; Phan, 2013; Puzziferro, 2008; Yukselturk & Bulut, 2007) and self-efficacy was one of the most significant predictors of students' learning achievement in both online and traditional classrooms (e.g. Miltiadou, 2001; Phan, 2013). Zimmerman (1989) also suggested that learning context will influence students' self-regulated learning, particularly the arrangements of different academic tasks and learning activities. The flipped designed courses invert the traditional classroom settings and have different learning activity arrangements compared to both traditional face-to-face and pure online classes.

Flipped Classroom

Flipped learning presents students with asynchronous learning materials before class, which frees up class time for instructors to lead student-centered activities, so that students may have an active role in the learning process. At the same time, instructors provide different interactive activities during class time to facilitate a better understanding, which requires students to keep up in order to participate during class time. With a self-paced instructional setting in flipped design, students can effectively have a high-level of mastery learning (Roach, 2014). Roach (2014) also observed that students who favored the design and watched the pre-course materials would have a high achievement score. Overall, most students show positive attitudes to flipped learning with better academic achievements and higher course satisfaction compared to the traditional classroom (Zhonggen & Wang, 2016). Given the potential benefits of flipped learning, there could be increasing interest in this format among instructional designers and faculty.

Since the turn of the present century, more instructors have been implementing the design of flipped classroom (Bishop & Verleger, 2013). Additionally, the flipped teaching model promotes interest to research scholars in different fields, such as education, nursing, and psychology. Lage, Platt, and Treglia (2000) defined the flipped (or inverted) classroom as a format where "events that have traditionally taken place inside the classroom now take place outside the classroom and vice versa" (p. 32). The flipped classroom usually provides individuals with computer-based learning resources (such as video lecture) outside and before the class and knowledge building related applicable activities during the regularly scheduled face-to-face class time. What's more,

flipped classroom promotes change for the traditional learning classroom, which employs asynchronous instructional materials from online learning environments.

The asynchronous aspect of the flipped classroom carries some of the same flexibility benefits as online learning, which provides a time-independent and place-independent learning environment, making it convenient and flexible for diverse learners (Deal III, 2002; Hammonds, 2003). Unlike traditional in-class lecture, the pre-recorded video lectures can be watched multiple times at students' convenience, which could facilitate students' class preparation, assignments completion, and other self-study purposes (Smith, 2013). As students have direct access to learning materials through the Internet, they gain control and freedom to learn at their own pace and style, anytime or anywhere. Additionally, students could also store and retrieve the digital information freely with enough time to revisit or focus on what they want (Li & Irby, 2008; Paivio, 1990).

Besides flexibility, the inherent convenience of using multimedia to enhance the learning materials also contributes to the prevalence of flipped learning. The accessible emerging technology allows faculty to convert and embed multimedia on websites or any learning management system (LMS) easier. The multimedia tools not only realize the purpose of displaying different types of information—including graphics, video, audio, and interactive gadgets—but also have the potential to organize the learning materials. For example, the use of hyperlinks makes relevant materials available for students without cluttering up the main content (R. W. Taylor, 2002). The development and sharing of educational resources before class supported by educational technology contributes to a better learning environment.

During the class time, instructors' presence or scaffolding in group activities helps ease the concern of students that they are not gaining by discussing with their classmates (Roach, 2014). The flipped classroom enhances learning, improves learning outcomes (McLaughlin et al., 2014), and enables opportunities to work at one's own pace, for teachers to customize and update curriculum according to student's need, for both students and instructors take advantage of the class time (Fulton, 2012). The most frequently reported benefits associated with flipped classroom include the ability to increase learning performance, increase engagement, stimulate more discussions, employ cooperative learning, and cultivate better learning habits and positive attitudes (Giannakos et al., 2014). Students, instructors, and course designers alike share the promise and advantage of flipped learning.

The potential challenge of the flipped classroom is also discussed in various studies. The course design causes the instructors high initial cost, which incorporates time, technical support, and financial support (Giannakos et al., 2014). Additionally, a small portion of students were reported to be frustrated and struggled with the flipped course format, especially for students with a strong preference for traditional lecture learning, which leads to a negative attitude with the flipped course design, leading to decrease of class attendance (Giannakos et al., 2014; Roach, 2014; Strayer, 2012). These students were more familiar with traditional face-to-face lecture style in which they could have a better focus on real-time interaction opportunities (Schultz, Duffield, Rasmussen, & Wageman, 2014). For example, some students expressed that they dislike the feature of not having the professor available to ask questions during the out-of-class portion, especially while they were watching pre-made lectures (Gilboy et al., 2015; Johnson,

2013; Schultz et al., 2014). Moran and Young (2014) did a mixed method research in a flipped English Language Arts classroom and found that students had mixed feelings about the flipped method, and the ones who were less successful found the self-paced nature of flipping to be frustrating and had trouble navigating the before-class instructional unit. Other concerns also raised by the students that the flipped format increased study time compared to previous courses, that they felt their effort was not indicative of course credits they deserved. Furthermore, several students complained that they felt less motivated by taking responsibility for their learning in a self-paced learning environment, especially while the learning process was less stimulating and more boring than traditional lectures (Johnson, 2013).

Because there is no one model for flipping a classroom, instructors might have different implementations, which could lead to different effects on students' learning. Different course structures with different active-learning interventions and implementations could have effects on students' course performance, completion assigned course materials, time spent for study, and the sense of classroom community (Eddy & Hogan, 2014). McLaughlin et al. (2014) discussed the philosophy and methodology used to flip a university course, where they also mentioned that they had identified new strategies that could enhance students' learning and foster their motivation based on teaching experiences and students' feedback, such as replace in-class activities. Hung (2014) compared different course structures of non-flipped, semi-flipped, and flipped classroom through three lesson assessments, and found the participants' academic performance in the flipped classroom was significantly higher than in the semi-flipped and non-flipped classrooms. However, no significant differences were found between the

three groups regarding students' learning engagement as measured by a questionnaire. Bomia et al. (1997) measured students' perceived course autonomy, competence, and motivation by questionnaires and found that teacher behaviors and strategies can influence student motivation, willingness, and enthusiasm in learning. In addition, they suggested teachers could enhance students' sense of autonomy, by offering optional choices for readings, for example, in order to promote students' motivation (Bomia et al., 1997). Another study conducted by Marsh and Overall (1981) found that instructors had a greater effect on students' perceived teaching effectiveness than other variables, such as they type of course, for both end-of-term and follow-up ratings. However, it is still unknown if different instructor implementation of flipped learning would have an impact on students' learning, motivation, use of materials, or perceptions.

Even though most flipped learning studies indicate that the majority participants have positive attitudes toward flipped learning, there was still a minority group of students who felt less satisfied with the flipped classroom method than the traditional lecture method (e.g., Johnson, 2013; Missildine, Fountain, Summers, & Gosselin, 2013; Schultz et al., 2014; Tune et al., 2013). Missildine et al. (2013) argued that flipped learning blended with various teaching techniques with relevant in-class activities did not necessarily improved students' course satisfaction. Pierce and Fox (2012) used flipped learning in a topic module and surveyed their students' views of the flipped learning activities. Thirty-eight percent of the students expressed that they disagree or strongly disagree with the statement that "I wish more instructors used the 'flipped classroom' model". The reason behind this negative attitude among the 38% is unclear.

The president and CEO of National Center for Academic Transformation (NCAT), Carol Twigg, stated that the design of flipped classroom "offers an opportunity to re-engage students and improve their motivation" (Tucker, 2012, p. 83). However, some students also reported that they felt less motivated compared to traditional classrooms (Johnson, 2013). More research is needed to evaluate the impacts of flipped classroom design and benefit more learners. Yet, it is still unknown how students' expectancy and the value motivational beliefs affect students' academic choices in a flipped classroom and whether the same predictive power of motivational beliefs on academic outcomes exists in the flipped classroom.

Need for the study

Tallent-Runnels et al. (2006) asserted that an understanding of learners' motivational beliefs is the key to a successful effective course design. Research has suggested that students have different motivational beliefs regarding different learning environments. For example, Clayton, Blumberg, and Auld (2010) concluded that students who preferred traditional classroom learning over the online environment showed a positive motivation and willingness to apply effort in class as it matched their personal learning habits with more engagement. However, we know little about learners' motivational beliefs in flipped instructional environments. At the time of this study, an unpublished dissertation from Long (2016) is the only study that investigates the relationship between motivation and students' learning performance in a flipped instructional setting. The study was performed with 37 participants, who were undergraduate and graduate students from different classes and the study only explored

the relationship between motivation and academic achievement. With these results, researchers indicate that there is a need for further research in this area.

The goal of this study was to explore the relationship between students' motivation and their experiences in flipped classrooms. The findings of this research will be useful to educators and course designers in selecting appropriate pedagogical strategies and considering potential pitfalls. The lessons learned from this study will be valuable additions to the growing body of research about flipped classrooms. The following are proposed research questions.

Research Questions

1) Do students' motivational characteristics, as measured by the MSLQ, have a relationship with learning performance in a flipped undergraduate class?
2) Do students' motivational characteristics, as measured by the MSLQ, have a relationship with student use of course materials in a flipped undergraduate class?
3) Do students' motivational characteristics, as measured by the MSLQ, have a relationship with students' perspectives on a flipped undergraduate class?
4) Do differences in how instructors implement flipped learning influence how students respond to a flipped learning classroom, in terms of students' motivational characteristics, learning performance, use of course materials, and perspectives on a flipped undergraduate class?

Summary

This chapter discusses the theoretical foundations of the research and provides a literature review regarding motivation theory, motivation with traditional and online

environments, and flipped classroom design. Based on those, a research gap was defined and research questions were developed as mentioned. In chapter three, the methods of this dissertation will be discussed.

CHAPTER III

METHODS

In this chapter, the researcher will explain the research design procedures in detail. The participants' population and sample information will be covered. Additionally, the researcher will introduce the instructional context regarding the flipped classroom design. Furthermore, the author will talk about the study instruments and other data that was collected. Finally, data analysis, ethical guidelines, and limitations of this study will be discussed.

This proposed study took place in undergraduate college classes that were taught in a flipped format. The sample was recruited from a Midwestern public university with a Carnegie classification of "high research activity." The researcher was allowed to pursue this study in two flipped courses from the departments of hospitality and tourism and leisure studies. This study examined motivation in flipped classrooms of Hospitality Management and Organizations course and Evaluation of Leisure Services course in 2017 fall semester. Data were collected through self-report surveys and analysis of log data from the learning management system.

Research Design Procedures

By the fourth week of the semester when the final enrollment was finalized, the researcher collected the course syllabus and all announcements sent to students regarding flipped instruction structure. At the same time, the researcher observed the class meetings for two courses through the semester and kept field notes to have a rich description of the class environment and activities. For most of the observed class meetings, the researcher sat at the back of the class and took notes.

In the 14th through the 16th week of the course, a motivation and perspective survey regarding flipped classroom experience was delivered to the class on paper or through a survey platform, Qualtrics. The motivation survey was adapted from motivation scales of the Motivated Strategies for Learning Questionnaire (MSLQ) (Pintrich et al., 1991), and the perspective survey was adapted from a validated study, with slight modifications to fit the flipped course context, by Pierce and Fox (2012).

After the semester ended, the learning management system log data of online course materials usage and all grades through the semester (including in-class/online quizzes, tests, project scores, and the final grade) were gathered for the students who agreed to participate the study. Additionally, the anonymous end-of-semester course evaluation survey, which was developed and administered by the university, was also collected to assess the overall class evaluation. Furthermore, to have a better understanding of the flipped design, the researcher conducted short interviews with course instructors in spring 2018 semester. Table 1 detailed data collection procedures.

Table 1

Research Design Procedure

Week	Data need to be collected
Week 4	Collected course syllabus and schedule.
Week 4 to Week 16	Observed the class.
Week 14 to 16	Surveyed in class or online (Take 25-30 minutes)
	Provide students with feedback form through email.
	Collected Brightspace log data
	Collected all grades through the semester (in class/online quiz, project scores, final grade, etc.)
	Collected course evaluation survey results
	Conducted instructor interviews

Participants

Population. The population of the study is undergraduate students enrolled in classes taught in a flipped format, at Midwestern public universities with a Carnegie classification of "high research activity."

Sample. This study used purposive sampling that selected two flipped undergraduate university courses as samples for this study. These two courses were selected for using flipped instructional strategy for teaching an undergraduate course. In total, 59 participants were recruited from the two university courses, namely *Evaluation of Leisure Services* and *Hospitality Management and Organizations*.

Research Context

Evaluation of Leisure Services course. This course aimed to introduce evaluation methods, techniques and applications related to different functions of leisure service. After completing the course, students were expected to be able to design,

implement and analyze the assessment project for a leisure service. At the beginning of the semester, the instructor talked about the flipped design of the course to prepare the students. Before coming to class each week, the students were required to read the textbook with guidance from a PowerPoint posted on the university learning management system, Brightspace. During the class time, the instructor did interactive learning activities, such as group presentations or discussion with questions or prompts based on the learning materials. Throughout the semester, there were 12 in-class workdays, in which students worked in a randomly assigned group to prepare their evaluation project. On some of those days, students were asked to submit their drafts before class so they could receive feedback during class time. Other days, students worked in class with their teammates and submitted the draft by the end of class. Four unit quizzes, seven drafts, and one evaluation project were graded throughout the semester. The unit quizzes were not comprehensive and were delivered online in weeks 3, 6, 9, and 13. The evaluation project was a team project with 27 students divided into eight groups. The project required students to evaluate an actual recreation or relevant program with a local agency.

Hospitality Management and Organizations course. This course focused on hospitality industry related functions and methods of management principles, function, methods, and other skills. Before coming to class, students were required to read assigned materials, watch narrated PowerPoint lectures and complete a quiz on Brightspace. The narrated PowerPoint lectures were usually less than 40 minutes in total. In most of the weeks, students also need to answer several questions and submit a reflection report. During the class time, students would do different in-class exercises, such as mini-quizzes, in-class small group discussions, and short case studies, which would count as

class participation toward 10% to 20% of the overall grade for the course. Additionally, the instructor explained misunderstandings and difficult concepts based on the quiz results and reflection answers submitted before class. There was a group presentation, a midterm exam, and a final exam throughout the semester as well. The exams reflected both in-class materials and the assigned supplemental materials posted on Brightspace. However, the students could choose not to take the final exam if they obtained 90% or more of the total points after completing the last assignment in week 16.

This study collected data in the two courses as mentioned above from Education College and Human Science College. Those two are three-credit upper division level courses that meet two to three times per week for a total of 150-min time periods. Both are mandatory courses for major students and are perceived as challenging courses according to the instructors. According to the instructors, students were expected to take an active role in their learning progress. Neither course had mandatory final exams that made up large portions of the overall grade. Students' performance was evaluated by their cumulative learning activity participation and performance, such as project presentations, reflections, and case studies. The dynamic nature of the courses required students to integrate knowledge, use higher-order thinking and problem-solving skills, and engage in group discussions to understand the concepts. This type of course naturally lends itself to a flipped format where students learn the materials, which include pre-recorded video or audio lectures and assigned readings from the textbook, posted on Brightspace before class and having class time devoted to interactive activities. Brightspace, a learning management system supported by the university, has the feature of tracking students' visit times and duration for each embedded pre-recorded video

lecture. This function could facilitate the collection of more accurate objective and factual data and help instructors to understand students' learning habits and behavior (Smith, 2013). Through Brightspace, students were able to view the materials on their device (PC/Mac/tablet/phone of their choice) and control the pace of their learning. They could rewind or change the speed of video as they preferred. They were also encouraged to store the material links or files for future review purposes. In addition, all the assignments were also required to be submitted online for instructors to keep records and grades.

Instruments

Students completed a questionnaire consisting of three parts toward semester's end: flipped classroom perceptions, motivation, and demographic information. The researcher described three parts of the instrument as listed in the following sub-headings.

Flipped Classroom Perceptions Questionnaire. The flipped classroom perceptions questionnaire was adapted from a study that had a similar purpose to examine students' perceptions of learning materials and activities in a flipped classroom (Pierce & Fox, 2012). The instrument had 10 statements on a five-point Likert-type scale, ranging from strongly agree to strongly disagree. The first five scale items addressed the pre-class learning materials and the second five items focused on students' overall perceptions of a flipped classroom (Pierce & Fox, 2012). Pierce and Fox (2012) found a Cronbach alpha measure of reliability equal to 0.82 for the first subscale and 0.83 for the second subscale. The instrument was slightly modified, after obtaining the developer's consent, to meet the course context of this research. For example, "I am confident about my ability to address these topics on the final exam" was changed to "I am confident about my ability to

address the topics in the projects." The second part of the instrument was the motivation questionnaire.

Motivated Strategies for Learning Questionnaire (MSLQ). Students' motivational beliefs were measured by the motivation subscales of the Motivated Strategies for Learning Questionnaire (MSLQ) without any modification, designed and developed by Pintrich et al. (1991). There has been extensive use of the MSLQ to study students' motivational beliefs and their relationship with other factors related to students' learning (Duncan & McKeachie, 2005). The instrument was theoretically grounded in the expectancy-value model (e.g., Eccles, 1983) and aimed to access students' motivation and their use of different learning strategies in the classroom for a college course (Pintrich & De Groot, 1990). The MSLQ measured students' motivational beliefs including their basic expectancy and value beliefs about their ability to perform a task and the importance and interest of a task (Pintrich & De Groot, 1990). The average reliability coefficients (Cronbach's coefficient alpha) of MSLQ subscales ranged from 0.61 to 0.88, which indicates that the MSLQ can be used across a variety of different samples with a good internal consistency (Feiz & Hooman, 2013; R. Taylor, 2012). Duncan and McKeachie (2005) reported there were more than 55 published studies using MSLQ to examine the relationship between students' motivational beliefs and their learning from 2000 to 2004 under different instructional strategies.

The MSLQ is a self-report Likert-type scale instrument consisting of 81 items, which form 15 subscales: six motivation subscales and nine learning strategies subscales (Pintrich et al., 1991). Participants responded to each item using a seven scale ranging from 1= not at all true of me to 7 = very true of me. According to the instrument

developer, these 15 subscales were designed to be modular and can be used together or singly to fit the needs of the researcher (Garcia & Pintrich, 1996). In separate studies using the MSLQ instrument conducted by Long (2016), Rotgans and Schmidt (2012), Pintrich (2000), and Pintrich and De Groot (1990), results suggested the motivation subscales contributed more to and performed as better predictors of student success than the learning strategy scales. In this research, only the motivational subscales were used to evaluate the motivational and cognitive effects of flipped course design interventions. The first 31 items constitute six motivational belief subscales, which are (1) task value, (2) intrinsic motivation, (3) extrinsic motivation, (4) control beliefs about learning, (5) self-efficacy, and (6) test anxiety. Eccles and Wigfield (2002) did not mention test anxiety as a direct influence on students' achievement choices. Therefore, the subscale of test anxiety was removed from this study. In total, five motivational subscales of 26 items were used in this study (see Table 2). The motivation section assesses students' expectancy perceptions, value beliefs, and their anxiety about assessments in a particular course. Based on the expectancy-value model, the author will examine the motivational beliefs that might have a direct influence on students' achievement choices, namely two expectancy beliefs: self-efficacy and control of learning and three value beliefs: intrinsic motivation, extrinsic motivation, and task value.

Table 2

Listing of MSLQ Motivation Scales

MSLQ Category	MSLQ Sub-category	Number of Items
Motivation Scales	Intrinsic Motivation	1, 16, 23, 25
	Extrinsic Motivation	7, 11, 13, 31
	Task Value	4, 10, 18, 24, 27, 28
	Control of Learning	2, 9, 19, 26
	Self-Efficacy	5, 6, 12, 15, 21, 22, 30, 32

Use of Online Materials. The researcher was granted a role of teaching assistant in Brightspace for both flipped courses. The role allowed the researcher to view each student's course progress, from where the researcher was able to collect the data of overall topics visited, overall contents visited times, and overall contents time spent for each partcipant. With those data, the researcher calculated the Content Topics Visited Rate, Times Visited per Topic, and Content Time Spent on Each Topic (seconds) using the following formula:

Content Topics Visited Rate = overall topics visited / all topic posted by the instructor;

Times Visited per Topic = overall contents visited times / overall topics visited;

Content Time Spent on Each Topic (seconds) = overall contents time spent (seconds) / overall topics visited.

To test students' attention and provide more validity to the survey results, one instructional manipulation check question: "Please tick 'three' if you are reading this

question" was embedded into the middle of the questionnaire (Oppenheimer, Meyvis, & Davidenko, 2009).

As a form of compensation for the participation, the researcher provided student feedback based on their interest, expectancy for success, and test anxiety with students' individual scores, the class scale means, and scores of the bottom 25%, middle 50%, and top 25%. The descriptions of each scale and suggestions on how to modify and even increase their motivation levels were also included in the feedback form (Pintrich et al., 1991).

Demographic Information Questionnaire. The last part of the instrument asked about students' demographic information. It included seven multiple choice questions and two open-ended questions, among which two of the multiple choice questions were about their previous online course and flipped course learning experience and reasons for taking this class. The two open-ended questions at the end of the survey were to capture students' voice about what they like and dislike about flipped class design. However, this dissertation will only discuss the quantitative results.

Data Analysis

With the direct measurable data collected, the researcher cleaned the invalid responses and used statistical methods to analyze the data. Before running the analysis, the data was cleaned by removing incomplete or invalid records. Then the researcher analyzed the data using descriptive and inferential statistics to provide descriptions of the sample through tables. Students' names were coded into numbers for identity protection purpose. Descriptive statistics and histogram charts were used to look at the demographic

and basic information of the sample. Demographic data was reported and compared to the university population, which was found on the official website of the university to assess whether the sample was a good representation of the population. Additionally, the author checked the assumption of normality before running other tests.

This study ran Mann-Whitney U tests, correlation, regression analysis, and other tests to analyze data with Statistical Package for the Social Science (SPSS), v24 (IBM, Armonk, NY). Mann-Whitney U tests were used to compare the differences between how instructor implemented the flipped learning. Correlation analysis revealed the bivariate correlation between variables. The regression analysis was run to explore a further possible predictive relationship between variables. More specifically, the predictor variables were motivational subscales, which were intrinsic motivation, extrinsic motivation, task value, control of learning beliefs, and self-efficacy for learning and performance. Furthermore, research suggested that a large sample size such as 300 or more is necessary for a non-experimental study to have validated results in a multiple regression test, which allows generation of a close estimate in the population (Bujang, Sa'at, & Bakar, 2017). The subscale scores were calculated by mean average. As all worded items were positive statements, the final reported statistics indicated positive levels of interest to the scales. Three criterion variables were examined in this study. One of the variables was the students' learning performance, which included their calculated percentage of total possible points. The second variable was students' perception score of flipped classrooms, which was measured on a 5.0 scale of 10 items. The third and final criterion variable was students' use of online material, which was represented by Brightspace log data. The researcher made regression equations using motivational

variables to predict three criterion variables, to examine how motivation subscales predict students' learning performance, perceptions of the flipped classroom, and use of online materials. Among the regression equations, correlation coefficients, and β weights were calculated and interpreted. Students' responses to the open-ended questions were not analyzed in this dissertation.

Ethical Guidelines

The local university IRB office for human subjects approved this research. Students' written consent were obtained from all participants. Before students participated in the study, they were informed that their participation was totally voluntary and not related in any way to their grade in the class. Participants were encouraged to answer the questionnaire as accurately as possible, reflecting their own experiences in the flipped course. Students were also informed that they would receive an individual report in several weeks, which would help them identify methods they might use to improve their motivation and future learning. The researcher's contact information was also provided to address any concerns related to the research. The students were provided with contact information for the university Institutional Review Board (IRB) office if they had questions about their rights as a research volunteer.

Summary

This chapter discussed a detailed description of the research design. The characteristics of the population, sample, and sampling method of the experiment were reviewed, and a brief description of data collection procedures, instruments, and data analysis was provided.

CHAPTER IV

RESULTS

The purpose of this dissertation was to explore relationships between students' motivational beliefs of expectancy and value and students' learning, use of materials, and perspectives in a flipped undergraduate class. The researcher conducted this study in two flipped undergraduate courses that she observed and distributed paper surveys towards the end of the semester. Students' motivational beliefs were measured by motivational subscales in Motivated Strategies for Learning Questionnaire (MSLQ) (Pintrich et al., 1991) of intrinsic value, extrinsic value, task value, control of learning, and self-efficacy on a 7.0 scale. An established questionnaire developed by Pierce and Fox (2012) on a 5.0 scale was used to measure students' perspectives towards a flipped classroom. Students' learning performance was represented by the course final grade overall percentage without bonus point activities that were not relevant to learning, such as points awarded for completing a survey. The bonus points awarded for learning related activities, such as attendance at a seminar and a written reflection paper, were counted as part of the final grade. Online learning management system log data were used to investigate students'

use of online materials in three variables, which were Content Topics Visited Rate, Times Visited per Topic, and Content Time Spent on Each Topic.

To answer the four research questions involving student learning performance, online learning material usage, perspectives towards flipped classrooms, and motivation scores in flipped undergraduate courses, the researcher collected quantitative data and ran data analysis in IBM SPSS and Microsoft Excel. Table 3 shows data sources and analysis methods that align with each research question. This chapter presents the data analysis results for this study. The descriptive data for the sample were displayed. Spearman's rho tests and multiple linear regression tests examined the bivariate correlation and possible predictive relationship between variables. As the data were not normally distributed, Mann-Whitney U tests were used to compare group means.

Table 3

Quantitative Data Source Alignment to Research Questions

Research Questions	Data Item	Data Source	Data Analysis
1) Do students' motivational characteristics, as measured by the MSLQ, have a relationship with learning performance in a flipped undergraduate class?	• Five motivational subscales. • Final course grade percentage.	Survey. Brightspace grade book.	Spearman's rho tests to examine bivariate correlation. Multiple linear regression to explore predictive relationships.
2) Do students' motivational characteristics, as measured by the MSLQ, have a relationship with students' use of course materials in a flipped undergraduate class?	• Five motivational subscales. • Content Topics Visited Rate. • Times Visited per Topic. • Content Time Spent on Each Topic (seconds).	Survey. Brightspace log data.	Spearman's rho tests. Multiple linear regression.

3)	Do students' motivational characteristics, as measured by the MSLQ, have a relationship with students' perspectives on a flipped undergraduate class?	• Five motivational subscales. • Flipped classroom perception scale.	Survey.	Spearman's rho tests. Multiple linear regression.
4)	Do differences in how instructors implement flipped learning influence how students respond to a flipped learning classroom, in terms of students' motivational characteristics, learning performance, use of course materials, and perspectives on a flipped undergraduate class?	• Five motivational subscales. • Final course grade percentage. • Flipped classroom perception scale. • Content Topics Visited Rate. • Times Visited per Topic. • Content Time Spent on Each Topic (seconds).	Survey. Brightspace log data. Brightspace grade book.	Mann-Whitney U test to compare group means.

Descriptive Results

Study Participants. This study took place at a Midwestern public university with a Carnegie classification of "high research activity." The survey was distributed to 65 participants in two courses and resulted in a sample size of 59. Of the 65 questionnaires submitted, three records were removed because they were incomplete or not valid. Three records completed online were also removed because the documentation of the participants' consent was deemed to be incomplete. Thus, 59 valid questionnaire records were left for analysis.

Descriptive and inferential statistics (see Table 4) were computed on the 59 participants, and included 13 males and 46 females. The mean age was 21.55 years (range 19 - 30). Twenty-seven participants that majored in Recreation Therapy and Management were in the Evaluation of Leisure Services course (RMRT group) and the other 32 participants that were enrolled in Hospitality Management and Organizations course (HRAD group). Participants included 11.9% sophomore, 35.6% junior, and 50.8%

senior. The self-reported breakdown of approximate grade point average (GPA) before the semester of data collection was 10.2% reporting a 4.0 average, 28.8% with 3.5-3.99 points, 35.6% with 3.0-3.49 points, 17% with 2.5-2.99 points, 3.4% with 2.0-2.49 points, and 1.7% with less than 2.0 points. The researcher assigned the middle value of the GPA range to the record, such as the records of "3.5-3.99" were replaced with a value of "3.75", the students who choose "4.0" were assigned with value "4". In this way, the researcher calculated an approximate GPA mean of 3.31 (range 1.0 - 4.0) with a standard deviation of 0.56. A comparison with enrollment statistics available from the university registrar indicated that, the 22% of male and 78% of female sample size is representative of the student population in the Human Science College and Education, Health, and Aviation College.

The questionnaire asked participants to report their reasons for enrolling in the course, and also their previous experience with flipped learning and with courses with large online components. Results showed that 98.3% of the participants selected that the course was required by the program or major, 10.17% of the students took the course because they were interested in the content, while only 6.78% (four students) indicated that they took the course because they wanted to improve their academic skills. Regarding students' previous experience with flipped learning, 72.9% of them indicated that this was their very first flipped designed course, 16.9% had taken one flipped class before, and only 10.2% had taken more than two flipped classes. However, 59.3% students had taken more than two courses that had large online components, while only 16.9% students did not have much experience with courses with large online learning components. Table 4 shows the Descriptive Statistics of the Sample as discussed above.

Table 4

Descriptive Statistics of the Sample (N = 59)

	RMRT	HRAD	Total
Group	*N* = 27	*N* = 32	45.76% RMRT 54.24% HRAD
Gender	25.9% Male 74.1% Female	18.8% Male 81.3% Female	22% Male 78% Female
School Year	3.7% Sophomore 11.1% Junior 81.5% Senior	18.8% Sophomore 56.3% Junior 25% Senior	11.9% Sophomore 35.6% Junior 50.8% Senior
Age[a]	22.07 (2.42)	21.1 (1.99)	21.55 (2.23)
Self-reported GPA[a]	3.38 (0.45)	3.25 (0.64)	3.31 (0.56)
Flipped Classroom Experience	85.2% First timer 11.1% Second timer 3.7% Third timer or more	62.5% First timer 21.9% Second timer 15.6% Third timer or more	72.9% First timer 16.9% Second timer 10.2% Third timer or more
Online Learning Experience	11.1% First timer 14.8% Second timer 74.1% Third timer or more	21.9% First timer 31.3% Second timer 46.9% Third timer or more	16.9% First timer 23.7% Second timer 59.3% Third timer or more

Note. RMRT = students in Evaluation of Leisure Services course; HRAD = students in Hospitality Management and Organizations course.

[a]data was presented in form of "mean (standard deviation)"

Research Context. This study was conducted in two undergraduate flipped courses in different disciplines (see Table 5 for comparison). One course is Evaluation of Leisure Services and the other one is Hospitality Management and Organizations course. Both courses were three credit university-level courses that were required courses in their respective majors. The two professors were introduced to the concept of flipped classrooms by university professional development workshops at different times and then designed their courses in the flipped model after consulting with instructional designers. However, the Hospitality Management and Organizations (HRAD group) course professor had taught the course since 2007 and flipped it for three years, while the

Evaluation of Leisure Services (RMRT group) course professor had taught the course since 2015 and this was her first time to flip the course. The HRAD professor flipped the course in order to let students learn the information before class so they could concentrate on practicing and applying the content during class time. She wanted students to know why the content and skills were important so students could attach value to the knowledge. On the other side, the RMRT course was traditionally a challenging course in the program. When students think about their future in recreation therapy or management, they usually do not get excited about the topic of evaluation, according to the instructor. The RMRT professor flipped the course hoping that students would have more opportunities to engage with the materials and apply them.

Table 5

Two Flipped Courses Comparison

	Hospitality Management and Organizations (HRAD group)	Evaluation of Leisure Services (RMRT group)
Experience	• First taught the course in 2007. • First flipped the course in 2014.	• First taught the course in 2015. • First flipped the course in 2017.
Participants	• 32 (56.3% juniors and 25% seniors) most are from two HRAD majors.	• 27 (81.5% seniors) from one RMRT major.
Before Class Self-learning Materials	• PowerPoint presentation (PPT). • Watch voiced over PPT lecture. • Supplemental readings or videos.	• PowerPoint presentation (PPT). • Read Textbook and use PPT as a guide.
Learning Topics Posted Online	• 40 Presentations of Learning Materials (e.g. PPT). • 17 Assignments. • 3 Others (e.g. syllabus).	• 11 Presentations of Learning Materials. • 4 Assignments. • 3 Others.

Due Before Class	• Quizzes (weight 15.13%). • (usually due before Tuesday classes) • Reflections (weight 27.23%). • (usually due before Thursday classes)	• N/A • *Weekly in-class work days since week 3 required students to have drafts ready to work on.
In Class	• Discuss misunderstanding or hard concepts identified from the quizzes taken prior to class. • Group discussion. • Group presentation (since week 5) (weight 3.78%). • Group mini quizzes (weight 7.26%) • Midterm (weight 15.13%) • Final Exam (optional) (weight 15.13%).	• Questions to check students understanding of learning materials. • Lecture (up to 2/3 of class time). • Group discussion. • Group presentation (week 15 & 16) (weight 9.1%). • Case studies. • Weekly in-class work days that work on group projects or drafts (since week 3) (weight 9.1%)
Due Right after Class	• Short case study solutions of in class activities (weight 7.26%).	• Evaluation project drafts (weight 25.4%).
After Class Assignments	• Right brain exercises (weight 9.08%). • Bonus activities (weight 6.05%).	• Unit quizzes (weight 36.4%). • Evaluation project. (18.2%)

Before each class started, both courses had learning materials posted on the Brightspace course sites. For each class module, the HRAD professor required students to watch narrated PowerPoint lectures and to do an online quiz or write a reflection based on the materials before class. Ten quizzes were set up through the course website. Each quiz had 10 questions and allowed one attempt for 40 minutes. Most of the quiz questions were scenario-based. The reflection assignments were based on supplemental readings and videos, which required critical analysis of materials by answering four to eight prompt questions. The recommended length of the reflections was 500-600 words. For the RMRT course, the professor required students to use static PowerPoint presentations as a guide for understanding the required reading in the textbook before coming to class. Through the semester, students were required to do a group project, which consisted of

seven drafts. Students were not required to submit any assignments before class; however, they were asked to bring prepared project drafts to class for discussion in each in-class work days. This course had weekly in-class work days where students worked on their group projects, beginning in week 3.

During class time, the HRAD professor did not lecture, but discussed or explained misunderstanding or hard concepts identified from the quizzes students had taken prior to class. The professor also encouraged students to participate in different in-class activities; such as group warm-up quizzes at the beginning of the class, which were followed by class discussion and correction of any wrong answers. For the RMRT group in-class time, the professor lectured for up to 2/3 of the class time, as she noticed some students were not prepared for in-class activities. Both flipped classes had in-class activities of case studies, group discussion, and group presentation activities to engage students. In several class sessions, during the semester the professors required assignments to be turned in right after the class to be graded, such as case study solutions in the HRAD class or project drafts in the RMRT class.

After class, in both courses, students were required to do certain assignments as well to reinforce the knowledge they learned or applied in class. Only the HRAD course had the midterm and final exams that reflected both in-class materials and discussions, and the assigned supplemental materials that were not covered in class. However, the final exam was optional as some students could have already earned an A grade before the final. In the RMRT course, the evaluation group project was worth 52.7% of the overall class grade (see Table 6). The evaluation project was a group assignment where

three or four students found an actual local agency for an actual recreation or relevant program to evaluate.

Table 6

Flipped Courses Class Activities and Grading

	Points	Weight
HRAD Grading		
In-class Activities (24)	96	14.52%
(e.g. small group discussions, mini-quizzes, and short case studies)		
Reflection Assignments (9)	180	27.23%
Right Brain Exercises (12)	60	9.08%
Group Presentation	25	3.78%
Quizzes (10)	100	15.13%
Midterm Exam	100	15.13%
Final Exam (optional)	100	15.13%
Bonus Activities (e.g. reflections of attending a lecture) (3)	40	6.05%
Bonus Points Not Involved with Learning Activities (3)	17	2.57%
Total	718	108.62 %
RMRT Grading		
Syllabus Quiz	10	1.8%
Unit Quizzes (4)	200	36.4%
Evaluation Project	100	18.2%
Evaluation Project Presentation	50	9.1%
Drafts (7)	140	25.4%
Attendance/Participation	50	9.1%
Total	550	100%

Motivational Scales. Five motivational subscales of intrinsic value, extrinsic value, task value, control of learning, and self-efficacy from Motivated Strategies for Learning Questionnaire (MSLQ) were examined in this study to represent students' expectancy and value beliefs. Inferential analysis results and internal consistency and

reliability are presented in Table 7. The Cronbach's Alpha coefficient for each of the MSLQ subscales was greater than 0.7, which mean that the internal consistency and reliability was at least acceptable (George & Mallery, 2003). For example, the intrinsic value subscale consisted of 4 items (α = 0.72). The Cronbach's Alpha coefficient for all 27 MSLQ items was α = 0.92, which indicated excellent internal consistency and reliability.

Table 7

Descriptive Statistics and Cronbach's Alpha Coefficients of the MSLQ Subscales (N = 59)

Measure	*M*	*SD*	Number of Items	Cronbach's alpha
Intrinsic value score	4.50	0.99	4	0.723
Extrinsic value score	5.19	1.19	4	0.726
Task value score	4.74	1.31	6	0.921
Control of learning score	5.58	1.08	4	0.851
Self-efficacy score	5.42	1.06	8	0.929

Analysis of the motivational subscales data revealed positive motivational beliefs towards the flipped class with a mean overall motivation score of $M = 5.16$, $SD = .82$ on a 7.0 scale. The mean overall expectancy score, calculated by computing the average of the *control of learning* score and the *self-efficacy* score, was $M = 5.50$, $SD = 0.96$. Similarly, data analysis revealed a mean of overall value score, which was calculated as an average of the *intrinsic value*, *extrinsic value*, and *task value* scores, of $M = 4.81$, $SD = 0.90$.

Performance and Perception Measures. This study aims to explore the relationships between motivational beliefs and learning performance, use of course material, and students' perspectives in a flipped classroom. Students' learning

performance was measured as the percentage of total possible course points earned. To increase the reliability of the data, the researcher removed the bonus points, which were not related to learning effort, from the final grade, such as bonus points gained for completing the course evaluation. Analysis of course grade data (see Table 8 for results) revealed a mean final grade percentage of $M = 91.30$, $SD = 7.47$, indicating that, on average, students got an A-level grade in these two undergraduate flipped classes.

Table 8

Descriptive Statistics of the Final Grade, Flipped Classroom Perception, and Use of Course Material

	N	*M*	*SD*
Final grade percentage[a]	59	91.30	7.47
Flipped classroom perception score	59	3.6	0.56
Content Topics Visited Rate[a]	59	74.63	20
Times Visited per Topic	59	3.02	1.11
Content Time Spent on Each Topic (seconds)	57	513.79	417.36

[a] data was measured as percentage of total.

Use of course materials was measured with three variables based on the Brightspace learning management system log data (see Table 8). The first one was called Content Topics Visited Rate, which was calculated by the percentage of mandatory content topics that were visited by the students. A percentage was used because the number of mandatory topics differed by class. The HRAD course had 60 mandatory topics and RMRT group had 18 topics. The Content Topics Visited Rate variable revealed a mean percentage of $M = 74.63$, $SD = 20$, indicating that, on average, students viewed most of the content topics posted online by the instructor and only a subset of them viewed all the content topics. The second one was named Times Visited per Topic, which was calculated by the total number of times that students visited all topics divided

by the number of content topics they visited. This variable provides a measure of the extent to which students visit the same topic several times. The Times Visited per Topic variable revealed a mean of $M = 3.02$, $SD = 1.11$, indicating that even though most students did not view all the contents posted online, they viewed some of the topics they visited more than one time. The last one was Content Time Spent on Each Topic, which was calculated by the total time students spent on all contents over the number of content topics that were visited by students. This variable provides an estimate of the average time students spent on each topic they visited. Two extreme records of Content Time Spent on Each Topic, which were greater than 1862 seconds, were removed after an observation with Boxplot and Stem-and-Leaf plots. The most likely explanation for these outliers is that sometimes students forget to close a course webpage after viewing the content. The Content Time Spent on Each Topic variable revealed a mean of $M = 513.79$, $SD = 417.36$, indicating that, on average, students spent 513 seconds, which is about eight minutes, on each topic they visited.

Students' perspectives towards flipped classrooms was measured by the mean of a 10-item scale. While inspecting the internal consistency and reliability of the flipped classroom perception scale out of the original 10 items, the initial Cronbach's alpha coefficient was .47. The removal of Item Two from this scale increased the Cronbach's alpha coefficient to .65, and the removal of Item Five further increased the alpha to .72. Because $\alpha = .72$ is a more acceptable internal reliability score (George & Mallery, 2003), the researcher decided to remove items two and five from the original scale as was adopted from Pierce and Fox (2012). The flipped classroom perception scores were

calculated out of eight scale items, which revealed a mean of $M = 3.6$, $SD = .56$ on a 5.0 point scale (see Table 8).

On average students had a 3.6 out of 5 score on attitudes towards the flipped classroom design, which indicated an overall positive attitude (See Table 9). Students reported a high score of 4.53 on the item of "instructor required student participation in the in-class activity". This was a reasonable and expected result as the core of flipped classroom is to ask students actively participant in class activities to integrate and apply the learning concepts. However, students reported a mean of 3.02 when asked if they wish more instructors used the flipped classroom model.

Table 9

Descriptive Statistics of Flipped Classroom Perception Scale (N = 59, α = .72)

Item	*M*	*SD*
1. Viewing the audio lectures and course materials before scheduled class prepared me for the class activity.	3.59	1.07
3. Viewing the audio lectures and course materials was essential to successfully participating in the class activity.	3.19	1.15
4. The instructor made meaningful connections between the topics in the audio lectures and course materials and the class activity.	3.92	0.93
6. I enjoyed being able to view the audio lectures and course materials prior to schedule class as opposed to live class lecture.	3.32	1.14
7. The instructor required student participation in the in-class activity.	4.53	0.75
8. I am confident about my ability to address the topics in the exams or projects.	4.03	0.81
9. I want more interaction between students and faculty in class.	3.24	0.80
10. I wish more instructors used the flipped classroom model.	3.02	1.15

Relationships between Motivation and Variables

The Shapiro-Wilk test was used to examine the assumption of normality before performing the parametric inferential statistics (see Table 10). However, the data were

not normally distributed on some scale items. For example, the distribution Content Time Spent on Each Topic scales score in the HRAD group was $D(30) = .836$, $p < 0.001$, suggesting strong evidence of non-normality. Frequency histograms of the non-normal distributed scale items were generated to have a better understanding of data distribution. Because most frequency histograms distribution was either quite skewed or flat, non-parametric tests were used.

Table 10

Shapiro-Wilk Tests of Normality

Group	Scale	Statistic	df	Sig.
HRAD	Content Time Spent on Each Topic	.836	30	.000
HRAD	Final without bonus	.893	32	.004
HRAD	Control of learning	.876	32	.002
HRAD	Self-Efficacy	.932	32	.044
RMRT	Content Time Spent on Each Topic	.883	27	.006
RMRT	Content Topics Visited Rate	.907	27	.019

Correlation and multiple regression analyses were conducted to examine the relationship between motivational belief scores and students' learning performance, online learning material usage, and perspectives towards flipped classrooms.

Motivation and Learning Performance in Flipped Courses. Spearman's rho test was used to examine the bivariate correlations between variables as not all scales were normally distributed. Based on the results of the study (see Table 11), of five motivational subscales, only the self-efficacy motivation score had a significant positive relationship with students learning performance at 0.05 level, $r_s(59) = 0.433$, $p = 0.001$). Despite the significance, the coefficient itself is small so collinearity is not a large

concern. The self-efficacy score was moderately correlated with students' final grade percentage, r_s (59) = .43, p = .001. According to Field (2018), the expected r for random data can be calculated by the number of predictors over sample size minus one. In this dissertation, the number of predictors was five and the sample size was 59, which brings a small effect of 0.086 (Cohen, 1988, 1992).

Table 11

Summary Statistics, Correlations, and Results from Regression Model to Predict Students' Final Grade Percentage

			Spearman's rho		Multiple regression weights			Collinearity Statistics	
Motivational Beliefs	*M*	*SD*	Correlation	Sig. (2-tailed)	b	β	Sig.	Tolerance	VIF
Control of Learning	5.58	1.08	.157	.234	-.005	-.075	.662	.502	1.992
Self-efficacy	5.42	1.06	.433*	.001	.039	.559*	.001	.596	1.679
Intrinsic Motivation	4.50	.99	.144	.276	-.002	-.020	.898	.601	1.663
Extrinsic Motivation	5.19	1.19	.089	.500	.004	.064	.621	.872	1.147
Task Value	4.74	1.31	.070	.596	-.011	-.185	.291	.483	2.069

Note. N = 59.
*p < 0.001.

Because the self-efficacy motivational belief was significantly correlated with students' learning performance, the researcher ran a multiple linear regression analysis to examine the relationships further. Although the sample size of 59 is not close to the 300 needed to generate a close estimate of the population, the researcher chose to do the regression as a way to explore the overall pattern of relationships in the data. Scatterplots between variables indicated there was a linear relationship. Even though the variables

were not normally distributed, the residuals were normally distributed as the values fell on the diagonal line of identity on a Normal P-P Plot (see figure 2) (Pedhazur, 1997). The multicollinearity tests were also performed and found that the VIF values are well below 10 and the tolerance statistics are well above 0.2, which indicated there probably was not cause for concern (Field, 2018). A multiple linear regression was employed to predict students' learning performance as measured by final course grade percentage based on five motivational subscale scores of intrinsic value, extrinsic value, task value, control of learning, and self-efficacy. The method of entering predictors is forced entry, with all predictors forced into the model simultaneously.

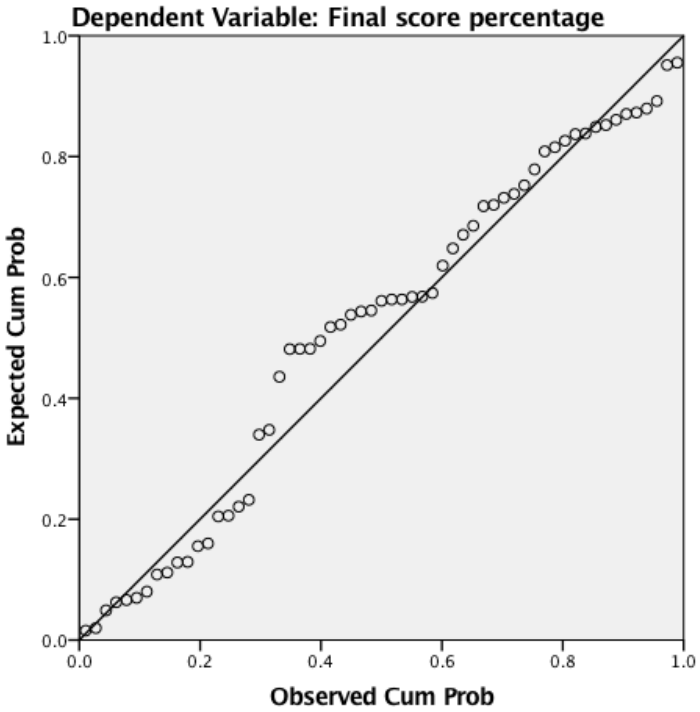

Figure 2. Normal P-P Plot of Regression Standardized Residual for Final Score Percentage

A significant regression equation was found, $F(5, 53) = 3.147$, $p = .015$, with an R^2 of .229. Participants' predicted final course grade percentage is equal to [.764-.005(Control of learning score)+.039(Self-efficacy score)-.002(Intrinsic motivation

score)+.004(Extrinsic motivation score)-.011(Task value score)]*100%, where final course grade percentage was standardized control with a possible maximum of 100% and motivational subscales were measured on a 7.0 scale. As can see in Table 11, only the self-efficacy score was a significant predictor of students' learning performance. Students' final course grade percentage increased 3.9% for each average point they got on a self-efficacy scale. Motivational beliefs of intrinsic value, extrinsic value, task value, and control of learning did not contribute to the linear regression model.

Motivation and Students' Use of Course Materials in Flipped Courses. The two flipped courses were designed differently regarding the online learning materials. The HRAD group posted 60 topics which included narrated PowerPoint lectures. The RMRT group had 18 topics, which were all documents to be downloaded, such as PowerPoint slides. Under this condition, students' Content Time Spent on Each Topic and Times Visited per Topic were not measured for the RMRT group. The researcher analyzed students' use of materials separately for the two groups. A series of Spearman rank-order correlations were conducted in order to determine if there were any relationships between students' motivation and their use of online course materials, based on analysis of Content Topics Visited Rate, Times Visited per Topic, and Content Time Spent on Each Topic for the HRAD group and the Content Topics Visited Rate for the RMRT group.

In the HRAD group, 32 students visited 65.2% content topics that were set by the instructors on average. Moreover, they visited each topic an average of 2.49 times and spent 355.84 seconds on each topic on average. The RMRT group had a Content Topics Visited Rate of 85.8% on average. There was no significant correlation between students'

use of online materials in flipped classrooms with their motivational beliefs for either group (see Table 12). All the Correlation Coefficients were between .013 and 0.317 which indicated the strength of the correlations was weak. In the HRAD group, students' Content Time Spent on Each Topic was positively correlated with all motivational beliefs. Moreover, the HRAD students' Time Spent per Topic was slightly negatively correlated with extrinsic motivation, $r_s(32) = -.183$, but was positively correlated with the other motivational beliefs. Furthermore, students' Content Topics Visited Rate was negatively correlated with extrinsic motivation, $r_s(32) = -.008$, and self-efficacy, $r_s(32) = -.040$, but positively correlated with intrinsic motivation, task value, and control of learning. For the RMRT group, students' Content Topics Visited Rate was positively correlated with extrinsic motivation and control of learning, but negatively correlated with intrinsic motivation, task value, and self-efficacy.

Table 12

Spearman's rho Correlation Coefficients of Motivation and Use of course materials

	Intrinsic Motivation	Extrinsic Motivation	Task Value	Control of Learning	Self-efficacy

HRAD					
Content Time Spent on Each Topic	.205	.238	.229	.033	.317
Times Visited per Topic	.153	-.183	.285	.247	.242
Content Topics Visited Rate	.149	-.008	.200	.076	-.040
RMRT					
Content Topics Visited Rate	-.226	.156	-.243	.013	-.049

Note. All coefficients were non-significant in this table at $p < 0.05$.

Motivation and Students' Perspectives about Flipped Courses. A Spearman's correlation was used to determine the relationship between 59 students' motivational beliefs and their perspectives towards an undergraduate flipped classroom. A two-tailed test of significance (see Table 13) indicated the there was a significant positive relationship between students' flipped classroom perception score and their motivation scores of intrinsic value [$r_s(59) = .457$, $p < .05$], task value [$r_s(59) = .443$, $p < .05$], control of learning [$r_s(59) = .413$, $p < .05$], and self-efficacy [$r_s(59) = .554$, $p < .05$] at 0.05 level. The strength of the correlations was moderate as the r_s values were all between .40 to .59. Despite the significance, the coefficient itself is less than 0.9 and there is no worry about collinearity (Field, 2018). The higher the students' motivation scores of intrinsic value, task value, control of learning, and self-efficacy, the higher the flipped classroom perception scores. However, a similar two-tailed test of significance indicated that students' extrinsic value of motivation score was unrelated to their flipped classroom perception score $r_s(59) = .148$, $p > .05$.

Table 13

Summary Statistics, Correlations and Results from the Regression Model to Predict Students' Perspectives of a Flipped Classroom

			Spearman's rho		Multiple regression weights			Collinearity Statistics	
Motivational Beliefs	*M*	*SD*	Correlation	Sig. (2-tailed)	b	β	Sig.	Tolerance	VIF
Control of Learning	5.58	1.08	.413**	.001	.012	.023	.879	.502	1.99
Self-efficacy	5.42	1.06	.554**	.000	.191*	.356*	.013	.596	1.68
Intrinsic Motivation	4.50	.99	.457**	.000	.105	.185	.183	.601	1.66
Extrinsic Motivation	5.19	1.19	.148	.264	-.015	-.031	.785	.872	1.15
Task Value	4.74	1.31	.443**	.000	.099	.229	.141	.483	2.07

Note. $N = 59$.
*$p < 0.05$. *$p < 0.001$.

A multiple linear regression analysis was conducted to evaluate how well the five motivational subscales predicted participants' perspectives of a flipped class. Scatterplots indicated there was a linear relationship and the Normal P-P Plot (see figure 3) suggesting the residuals were normally distributed. Multicollinearity tests were also performed and found that the VIF values are well below 10 and the tolerance statistics are well above 0.2, which indicated there probably wasn't cause for concern (Field, 2018). All predictors were forced into the model simultaneously. The linear regression results indicated the five predictors explained 40% of the variance, $R^2 = .40$, $F(5, 53) = 7.053$, $p < .001$.

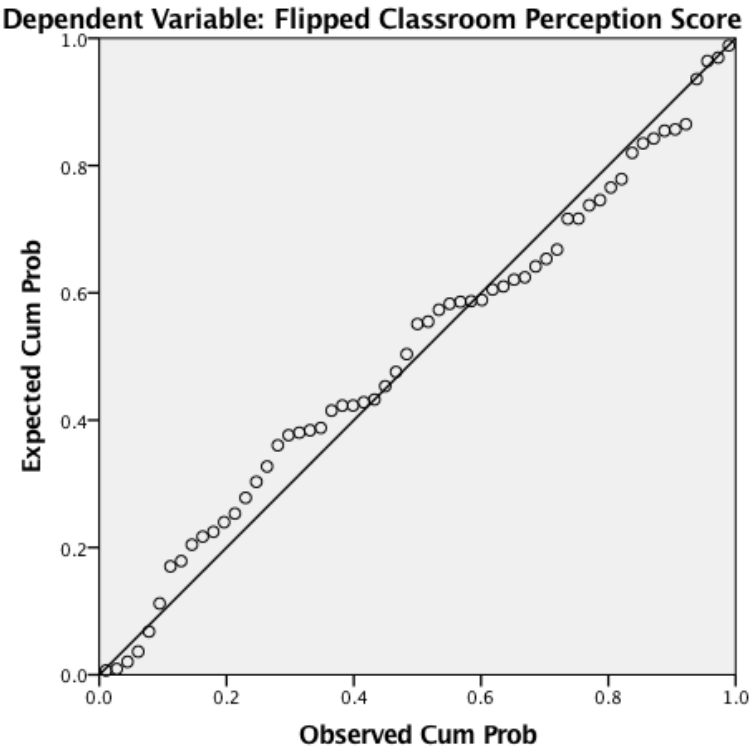

Figure 3. Normal P-P Plot of Regression Standardized Residual for Flipped Classroom Perception Score

Participants' predicted perspective score towards a flipped classroom is equal to [1.639+.012(Control of learning score)+.191(Self-efficacy score)-.105(Intrinsic motivation score)-.015(Extrinsic motivation score)-.099(Task value score)]*100%, where the perspective score was measured on a 5.0 scale and motivational subscales were measured on a 7.0 scale. As shown in Table 13, similar to the final grade percentage prediction model, only the self-efficacy score significantly predicted students' perceptions towards a flipped classroom ($\beta = .356$, $p = .013$). Motivational beliefs of intrinsic value, extrinsic value, task value, and control of learning did not contribute to the linear regression model.

Table 14 displays a summary of the two regression models. The adjusted R square shows the amount of variance that would be explained if the model were derived from the

population rather than a sample.

Table 14

Regression Models Summary (N = 59)

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
Motivational Beliefs Predict Students' Final Grade Percentage	.478	.229	.156	.0685771
Motivational Beliefs Predict Students' Perspectives Towards Flipped Classroom	.632	.400	.343	.45903

Instructor implementation differences

Demographic results. Descriptive statistics of the data (see Table 15 for results) indicated that 27 participants that majored Recreation Therapy and Management were in the Evaluation of Leisure Services course (RMRT group) and the other 32 participants that were enrolled in Hospitality Management and Organizations course (HRAD group), among those 21 of them were in Hotel and Restaurant Administration major, 10 were in Nutritional Science major and one was in English-Creative Writing major. Besides similar age, the two groups also reported a similar self-reported GPA before taking the flipped course. The RMRT group students had a mean of self-reported GPA of 3.38 with a standard deviation of 0.45, while the HRAD group students had a mean of self-reported GPA of 3.25 with a standard deviation of 0.64.

Table 15

Descriptive Statistics Comparison of Two Groups

	RMRT	HRAD
Group	*N* = 27	*N* = 32
Gender	25.9% Male	18.8% Male
	74.1% Female	81.3% Female
School Year	3.7% Sophomore	18.8% Sophomore
	11.1% Junior	56.3% Junior
	81.5% Senior	25% Senior
Age[a]	22.07 (2.42)	21.1 (1.99)
Self-reported GPA[a]	3.38 (0.45)	3.25 (0.64)
Flipped Classroom Experience	85.2% First timer	62.5% First timer
	11.1% Second timer	21.9% Second timer
	3.7% Third timer or more	15.6% Third timer or more
Online Learning Experience	11.1% First timer	21.9% First timer
	14.8% Second timer	31.3% Second timer
	74.1% Third timer or more	46.9% Third timer or more

Note. RMRT = students in Evaluation of Leisure Services course; HRAD = students in Hospitality Management and Organizations course.

[a]data was presented in form of "mean (standard deviation)"

Because some scales were skewed and not normally distributed, non-parametric tests were used in this study as they were robust to violations of the assumption of normality and homogeneity of variance (Field, 2018). Mann-Whitney tests were conducted to compare group differences and indicated that students' age, enrolled school year, previous experience with flipped courses and previous experience with courses that have large online components were significantly different between the two groups (see Table 16). Students' enrolled school year, previous experience with flipped courses, and previous experience with courses with large online components were surveyed as

multiple-choice questions and were coded into ordinal variables to run the test. Students in the RMRT group had a mean age of 22.07 with a standard deviation of 2.42, while students in the HRAD group had a mean age of 21.2 with a standard deviation of 1.99. A Mann-Whitney test indicated that the RMRT group students' age (*Mean Rank* = 35.72) was significantly greater than the HRAD group (*Mean Rank* = 24.08), $U = 250.50$, $z = 2.70$, $p = .007$, $r = 0.35$. The Pearson's correlation coefficient, *r*, as an effect size measure here indicated there was a medium to large effect as it was above 0.3 criterion for a medium effect size and below the 0.5 threshold for a large effect (Cohen, 1988, 1992). The effect accounted for 12.25% of the total variance.

Table 16

Mann-Whitney U Test Statistics of Sample (N = 59)

	Age[a]	School Year	Flipped Course Experience	Online Learning Experience
RMRT (*N* = 27)	22.07 (2.42)	3.7% Sophomore	85.2% First timer	11.1% First timer
		11.1% Junior	11.1% Second timer	14.8% Second timer
		81.5% Senior	3.7% Third timer or more	74.1% Third timer or more
HRAD (*N* = 32)	21.1 (1.99)	18.8% Sophomore	62.5% First timer	21.9% First timer
		56.3% Junior	21.9% Second timer	31.3% Second timer
		25% Senior	15.6% Third timer or more	46.9% Third timer or more
Mann-Whitney U	250.50	168.00*	330.00	315.50
Asymp. Sig. (2-tailed)	.007	.000	.046	.044

Note. RMRT = students in Evaluation of Leisure Services course; HRAD = students in Hospitality Management and Organizations course.

[a]data was presented in form of "mean (standard deviation)"

* $p < 0.001$

Meanwhile, 81.5% students that enrolled in the RMRT courses were seniors with 3.7% sophomore and 11.1% juniors, while 56.3% students that enrolled in HRAD courses were juniors with 18.8% sophomore and 25% seniors. A Mann-Whitney test also

indicated that students' enrolled school year was significantly different in two groups, where school year was coded into ordinal variables that "2 = sophomore, 3 = junior, and 4 = senior" Students' in the RMRT group (*Mean Rank* = 39.04, *M* = 3.81, *SD* = .491) were significantly higher grade level than the HRAD group (*Mean Rank* = 21.75, *M* = 3.06, *SD* = .669), *U* = 168.00, *z* = 4.30, *p* < .001, *r* = 0.56. The effect size showed a large effect that accounted for 31.36% of the total variance.

Furthermore, participants' previous learning experiences regarding course format of online materials and flipped design were significantly different in the two courses, as shown in Table 16. For these two items, students that indicated that this course was their first experience were assigned into ordinal variable 1, the ones that chose they experienced once before were assigned with a value of 2, and the students that indicated they had experienced the course format more than twice were assigned with a value of 3. After the coding, a Mann-Whitney test was employed and found that students in the HRAD course (*Mean Rank* = 33.19) had more previous experience with flipped courses than the RMRT group (*Mean Rank* = 26.22), *U* = 330.00, *z* = -1.99, *p* = .046, *r* = -0.26. The effect size showed a small to medium effect that accounted for 6.76% of the total variance. However, students in the HRAD course (*Mean Rank* = 26.36) had less previous experience with courses that had large online components than the RMRT group (*Mean Rank* = 34.31), *U* = 315.50, *z* = 2.02, *p* = .044, *r* = 0.27. The effect size showed a small to medium effect that accounted for 7.29% of the total variance.

Comparison results. Because many items were not normally distributed, in which some are quite skewed or flat, and one group had fewer than 30 participants, non-parametric Mann-Whitney U tests were used throughout to compare means. Students in

both courses had relatively positive motivational scores on all scales ranging from 4.3 to 5.7 on a 7.0 scale (see Table 17). As shown in table 17, there were no significant differences in final course grade percentage, students' flipped learning perceptions scores, and any motivation related scale scores between the two courses. Although the HRAD group had slightly higher mean scores on all the five motivational beliefs, learning performance, and flipped classroom perception scores, the differences were not statistically significant.

Table 17

Descriptive and Mann-Whitney U Test Statistics of Motivational Beliefs, Learning performance, and Flipped Classroom Perception Scores

	RMRT *M (SD)* (*N* = 27)	HRAD *M (SD)* (*N* = 32)	Mann-Whitney U	Asymp. Sig. (2-tailed)
Intrinsic Motivation	4.31(1.1)	4.66 (0.88)	379.50	.422
Extrinsic Motivation	5.00(1.39)	5.34 (0.99)	388.50	.507
Task Value	4.52(1.04)	4.92 (1.49)	340.00	.161
Control of Learning	5.42(0.97)	5.73 (1.16)	334.50	.136
Self-efficacy	5.26(1.01)	5.55 (1.09)	367.50	.326
Final Grade Percentage	0.91 (0.65)	0.92 (0.83)	369.00	.338
Flipped Classroom Perception	3.55 (0.43)	3.65 (0.66)	387.50	.496

However, there was a significant difference between students' learning material usage between two courses as measured by Content Topics Visited Rate. A Mann-Whitney test (see Table 18) was employed and found that, the HRAD students (*Mean Rank* = 21.89) had significantly lower Content Topics Visited Rate percentage than the RMRT group (*Mean Rank* = 39.61), $U = 126.00$, $z = 3.95$, $p = 0.00$, $r = 0.51$. The effect size showed a large effect that accounted for 26.22% of the total variance.

Table 18

Descriptive and Mann-Whitney U Test Statistics of Use of Online Materials

	RMRT *M (SD)* (*N* = 27)	HRAD *M (SD)* (*N* = 32)	Mann-Whitney U	Asymp. Sig. (2-tailed)
Content Topics Visited Rate	0.86 (0.13)	0.65 (0.21)	126.000	.000

As no significant difference was found in the overall flipped classroom perception score and motivation-related scores, non-parametric tests were also used to explore item-by-item. Results of this analysis showed that two flipped classroom perception items and four motivational belief items were significantly different between the two courses (see Table 19).

Table 19

Descriptive and Mann-Whitney U Test Statistics of Two Flipped Classroom Perception Items and Four Motivational Belief Items

	RMRT *M (SD)* (*N* = 27)	HRAD *M (SD)* (*N* = 32)	Mann-Whitney U	Asymp. Sig. (2-tailed)
Flipped Classroom Perception Scale				
The instructor required student participation in the in-class activity.	4.33 (0.68)	4.69 (0.78)	285.00	.009
I want more interaction between students and faculty in class.	2.96 (0.65)	3.47 (0.84)	283.00	.011
Motivation Scale				
I think I will be able to use what I learn in this course in other courses.	4.78 (1.25)	5.63 (1.56)	268.50	.011
I believe I will receive an excellent grade in this class.	5.00 (1.14)	5.75 (1.46)	270.00	.011
I am very interested in the content area of this course.	3.74 (1.26)	4.63 (1.70)	282.00	.020
I like the subject matter of this course.	3.48 (1.34)	4.41 (2.00)	299.50	.041

Mann-Whitney tests suggested that two flipped classroom perception items were significantly different for the two groups. A Mann-Whitney test indicated that the flipped classroom perception scale item seven, “the instructor required student participation in the in-class activity” was greater for the HRAD group (*Mean Rank* = 34.59) than for the RMRT group (*Mean Rank* = 24.56), $U = 285.000$, $z = -2.63$, $p = .009$, $r = -0.34$. The effect size showed a medium to large effect that accounted for 11.56% of the total variance. A Mann-Whitney test indicated that the flipped classroom perception scale item nine, “I want more interaction between students and faculty in class” was greater for the HRAD group (*Mean Rank* = 34.66) than for the RMRT group (*Mean Rank* = 24.48), $U = 283.000$, $z = -2.54$, $p = .011$, $r = -0.33$. The effect size showed a medium to large effect that accounted for 10.89% of the total variance. Students reported that the HRAD course required more in-class activities and the students in the HRAD group wanted more student-instructor interaction.

Four motivation scale items were significantly different for the two groups as indicated by Mann-Whitney tests. They were item 4, 5, 18, and 27, among which item 4, 18, and 27 were under task value subscale, and item 5 was in self-efficacy subscale. A Mann-Whitney test indicated that the task value motivation subscale item four, “I think I will be able to use what I learn in this course in other courses” was greater for the HRAD group (*Mean Rank* = 35.11) than for the RMRT group (*Mean Rank* = 23.94), $U = 268.500$, $z = -2.55$, $p = .011$, $r = -0.33$. The effect size showed a medium to large effect that accounted for 10.89% of the total variance. Moreover, the task value motivation subscale item 18, “I am very interested in the content area of this course” was greater for the HRAD group (*Mean Rank* = 34.69) than for the RMRT group (*Mean Rank* = 24.44),

U = 282.000, *z* = -2.32, *p* = .020, *r* = 0.30. The effect size showed a medium effect that accounted for 9% of the total variance. Furthermore, the task value motivation subscale item 27, "I like the subject matter of the course" was greater for the HRAD group (*Mean Rank* = 34.14) than for the RMRT group (*Mean Rank* = 25.09), *U* = 299.500, *z* = -2.04, *p* = .041, *r* = -0.27. The effect size showed a small to medium effect that accounted for 7.29% of the total variance. The three task value items all had a higher score for the HRAD group. Students in the HRAD group indicated that they had more interests, liked the subject, and were able to use the learning material more than the RMRT group. One self-efficacy motivation subscale item that, "I believe I will receive an excellent grade in this class" was greater for the HRAD group (*Mean Rank* = 35.06) than for the RMRT group (*Mean Rank* = 24.00), *U* = 270.000, *z* = -2.5, *p* = .011, *r* = -0.33. The effect size showed a medium to large effect that accounted for 10.89% of the total variance. This showed that students in the HRAD course were more confident about their final score.

Summary

This chapter was comprised of the results and findings from the data regarding students' learning performance, online learning material usage, and perspectives towards flipped classrooms, and their motivational beliefs in flipped undergraduate courses. Descriptive and inferential statistics were reported. As some of the scales were skewed and not normally distributed, non-parametric tests of Spearman rank-order correlations and Mann-Whitney U tests were used to explore relationships between variables throughout this dissertation. Multiple regression analysis was run to further determine the relationship between the predictor variables of students' learning performance, online learning material usage, and perspectives towards flipped classroom with five

motivational subscales of intrinsic value, extrinsic value, task value, control of learning, and self-efficacy as measured by MSLQ. The next chapter of this dissertation will further discuss these findings with conclusions.

CHAPTER V

DISCUSSION

This dissertation set out to explore the relationship between students' motivation traits in flipped classrooms. Much research has studied motivational beliefs in traditional and online learning environments, however, little research has been done in flipped classrooms. This study discovered similar patterns of motivation exist in flipped classrooms as they were in other learning environments. In this chapter, the author discussed the possible interpretation of data analysis results presented in Chapter Four. More specifically, the discussion was guided by four research questions as followed.

1. Do students' motivational characteristics, as measured by the MSLQ, have a relationship with learning performance in a flipped undergraduate class?

2. Do students' motivational characteristics, as measured by the MSLQ, have a relationship with students' use of course materials in a flipped undergraduate class?

3. Do students' motivational characteristics, as measured by the MSLQ, have a relationship with students' perspectives on a flipped undergraduate class?

4. Do differences Do differences in how instructors implement flipped learning influence how students respond to a flipped learning classroom, in terms of students' motivational characteristics, learning performance, use of course materials, and perspectives on a flipped undergraduate class?

Motivation and Learning Performance in Flipped Courses.

Students' academic choices can be influenced by their expectancy beliefs and value beliefs (Eccles & Wigfield, 2002). In this study, five motivational subscales of the Motivated Strategies for Learning Questionnaire (MSLQ) measured students' expectancy and value beliefs, which are intrinsic value, extrinsic value, task value, control of learning, and self-efficacy. Students' learning performance was calculated by their final overall score percentage without bonus.

On average, students had positive motivational beliefs in the flipped classroom with mean scores higher than 4.50 on a 7.0 scale. Self-efficacy belief had a significant correlation ($r_s = 4.33$, $p = 0.01$) with students' learning performance. Intrinsic value, extrinsic value, task value, and control of learning were correlated with learning performance in the expected positive directions, although some of the correlations were low. The positive correlation between motivational beliefs and learning performance indicated that students have similar motivation patterns in flipped classrooms as in traditional classrooms. This finding was not consistent with the results obtained by Long

(2016), who discovered no significant relationship between the MSLQ subcategories and final grade.

In this research, it was concluded that self-efficacy was a significant predictor of students' learning performance in an undergraduate flipped classroom. This result was expected as Wigfield and Eccles (2000) mentioned that student expectancy and value beliefs (in addition to other aspects of motivation) have the power to predict their learning performance. The researcher also found that all five motivational beliefs accounted for 22.9% of the variance in students' final score percentage. This was similar to findings from Garcia and Pintrich's (1996) research in a traditional classroom, where a subset of MSLQ variables accounted for 22% of the variance in students' final grade. These modest amounts of explained variance are not surprising, as many factors can account for variance in learning performance (Garcia & Pintrich, 1996); such as affective attitude (Xu & Wu, 2013). The significant predictive power of self-efficacy on academic performance had been proved by many studies (Wigfield & Eccles, 1992; Zimmerman, 2000). For example, Garcia and Pintrich (1996) discovered that self-efficacy emerged as one of the strongest predictors of performance. Schunk and Pajares (2002) also indicated that in online courses, students with higher positive self-efficacy are usually more motivated and perform better as self-efficacy motivational belief impacts students' task choice, academic persistence, and learning achievement. From this point of view, even though the value component of motivational beliefs - intrinsic motivation, extrinsic motivation, and task value - have the ability to directly influence students' academic choices (Eccles & Wigfield, 2002), they failed to predict students' learning performance (Pajares, Miller, & Johnson, 1999). The current results suggest that motivational beliefs

in flipped classrooms have patterns similar to traditional and online classrooms. Self-efficacy is a significant predictor of students' learning performance in a flipped classroom.

Motivation and Students' Use of Course Materials in Flipped Courses

Students' use of course materials were represented by three indicators. The first one was the number of content topics that were visited by students over all the mandatory topics that were set by the instructor (Content Topics Visited Rate). The second one was the total times that students visited all topics over the number of content topics that were visited by students (Times Visited per Topic). The third one was the total time students spent on all content over the number of content topics that were visited by students (Content Time Spend on Each Topic). The three indicators were calculated by Brightspace log data.

Wigfield and Eccles (2000) argued students' subjective value relates directly to students' beliefs about the reasons to perform a task. Therefore, it was unexpected to find no significant correlation between students' use of online materials in flipped classrooms with their motivational beliefs. The strength of the non-significant correlations was also weak. In the HRAD group, 32 students visited 65.2% of the content topics that were set by the instructors on average. Moreover, they visited each topic 2.49 times on average and spent an average of 355.84 seconds on each topic. The RMRT group had a Content Topics Visited Rate of 85.8% on average.

The small sample size of 59 might contribute to the inability to achieve significance. It was also possible that this non-significant finding was due to the imperfect measure of students' use of online materials. The Content Time Spent on Each

Topic variable included outliers that had a log data of more than 30 minutes spent on the course page. A likely explanation is that students failed to close the course window after visiting the content on Brightspace. Similarly, it was possible that some time data was not the actual time spent on viewing the Brightspace page. On another note, it was possible that students might open the learning content outside of the Brightspace environment, such as download files, in which there was no way to track the real working time.

Given that students' motivation has been shown to be positively related with their learning behavior (Christophel, 1990), it was surprising to find in the HRAD group students had a 65.2% Content Topics Visited Rate out of 60 topics. Students only stayed for an average of fewer than six minutes on the visited topics while there were eight lectures that had a length of 11 to 38 minutes. Overall, students displayed positive motivation; however, some might feel less motivated by the increased responsibility that comes with the flipped classroom (Johnson, 2013). It was found that using and learning the materials in a self-paced learning environment could be more stressful for some students (Johnson, 2013). It was possible that students only skimmed through the lecture notes to search for pre-class quiz answers but did not watch all the lecture videos. This would be consistent with previous studies showing that students perceived flipped learning as being very time-consuming and burdensome (Smith, 2013; Thompson et al., 2018; Tune et al., 2013). It was also observed by the researcher that some students were new to the instructional model (e.g., they asked the researcher "what is a flipped class?") and did not know exactly how the flipped classroom could facilitate their learning. This could be another reason that students failed to use posted materials to prepare for participating in-class activities.

Motivation and Students' Perspectives about Flipped Courses

In this study, students' perspectives on a flipped class were measured on a 5.0 scale with eight items. On average students had a 3.6 out of 5 perception score towards the flipped classroom design, which was consistent with early studies which showed that the majority of students have positive perceptions of the flipped classroom (Love et al., 2014; Pierce & Fox, 2012; Roach, 2014; Smith, 2013). Meanwhile, students also reported a mean of 3.02 when asked if they wish more instructors used the flipped classroom model. This is also consistent with previous studies that students had mixed feelings about the flipped method (Moran & Young, 2014) and some do not favor the flipped design compared to traditional classrooms (Zhonggen & Wang, 2016). Pierce and Fox (2012) also concluded that 38% expressed they do not wish to take other flipped courses.

A two-tailed test of significance indicated the there was a significant positive relationship between students' flipped classroom perception score and their value belief of intrinsic value, task value, control of learning, and self-efficacy beliefs. Self-efficacy had a significant predictive power on students' flipped classroom perspective scores. The significant correlations were consistent with Eccles and Wigfield (2002) assumption that students' expectancy and value beliefs have a direct impact on their achievement choices. Extrinsic motivation was the only tested motivational belief that failed to have a significant correlation with the flipped classroom perception score. Benware and Deci (1984) suggested that students with high intrinsic motivation would be more willing to engage in active learning and result in greater learning with more positive self-related affects and cognitions. They also linked extrinsic motivation with passive learning, which also supported the non-significant correlation with extrinsic motivation in this study.

Instructor Implementation Differences

The two flipped courses of HRAD and RMRT were designed differently according to subject matter and instructor preferences. The HRAD professor had flipped the course for three years and was satisfied with the flipped course structure, while this was the first time the RMRT professor flipped the course and she acknowledged that she would set up the course slightly differently next time to improve it. For example, she mentioned that she would add pre-class quizzes to make sure students read the books before coming to class.

The participants in two flipped courses also had significant differences regarding their age, school years, and previous experience with online learning and flipped classes. Students in the RMRT group were older than the HRAD group. Most students in the RMRT course were seniors while most students in the HRAD course were juniors. There were significantly more students in the RMRT course that had never before experienced a flipped course. It was possible the RMRT students did not know how the flipped design works and they were not used to preparing themselves before coming to class. Also, students with several years of experience with traditional classrooms (e.g., seniors) might be more reluctant than underclassmen to take an active role in their learning behaviors (Burke & Fedorek, 2017).

The HRAD course included pre-class audio narrated PowerPoint lectures and other learning materials for 60 content topics, while the RMRT group included 18 topics presented through PowerPoint slides. The HRAD students had to do pre-class quizzes, which may force them to preview the learning materials and prepare for the class. The RMRT professor acknowledged that she had to lecture for about two-thirds of the class

time, as she noticed that the students did not prepare for the in-class activities. Under this condition, it was interesting to discover that the RMRT students had significantly higher scores regarding the use of online materials compared to the HRAD group. Mann-Whitney U Tests indicated that the RMRT group students had a higher Content Topic Visited Rate. However, the researcher believes this was a case of the log data being misleading. The RMRT students downloaded the class materials and used them mostly in class for note-taking or other purposes rather than for pre-class preparation.

Results of the study indicated that there was no significant difference in students' motivational beliefs, learning performance, and perspectives about flipped classroom between the two groups. However, two flipped classroom perception scale items were significantly different between the two groups. The HRAD group indicated "the instructor required student participation in the in-class activity" more than the RMRT group. Another significant scale item was that the HRAD group students indicated that they "want more interaction between students and faculty in class". The first item was an objective statement about the degree of the in-class activities of flipped classrooms. This could have been because the RMRT instructor had to lecture about two-thirds in some of the class periods, which left less time for students' participation for in-class activities. The second item indicated that HRAD students want more interactions, which may relate to their previous experience. The HRAD group students had more previous experience with flipped classroom than the RMRT group. Because they had in-class activities in other flipped learning environments, they may have anticipated more in-class interactions between students and the instructor. The finding that students wanted more student-instructor interactions may be due to them not liking the collaborative learning with each

other, but wanting more instruction from the professor, as the professor observed the groups but was not actively involved with any group discussions.

The HRAD group had significantly more confidence that they would receive an excellent grade when compared to the RMRT group. Partial reasons may be due to the fact that the HRAD professor allowed 8.62% bonus points over all the possible points, which may have given students more confidence in getting a good grade. It was also possibly due to the fact that the HRAD group students had significantly more previous experience with flipped classrooms, which may have led to higher motivational beliefs in self-efficacy. In the HRAD class, 37.5% of the students indicated that they had taken a flipped class before, while only 14.8% RMRT students experienced one before. Lim et al. (2006) reported that students who had previous learning experience would demonstrate higher levels of self-efficacy. The experience and familiarity with the course structure might have the power to boost students' confidence and self-efficacy. It was important for the instructors to fully introduce the principles, foundations, and rationale behind flipped classrooms, so students would have better understanding of the importance and the expectation of preparation before coming to the class.

Limitations of the Study

There were several limitations for this dissertation study. It was noticeable that this study used a convenience sample and failed to get a 100% response rate. The participants that completed the survey might be stimulated by external incentives, such as bonus points and chances to get an amazon gift card by completing the survey. It was possible that the students who were not willing to participate in this study may have lower motivation or more negative perspectives towards flipped classroom compared to

the ones who participate in the study. In this way, the results may be biased and fail to represent the whole population of the undergraduate students who experience a flipped classroom.

The MSQL instrument developers Garcia and Pintrich (1996) suggested that students' motivation and learning strategies are contingent on the context and situation, instead of generalizable individual differences or learning habits. Students' responses might vary depending on the nature of different academic tasks and course structure itself (Pintrich et al., 1991). For example, students might have different motivations and interests toward different subjects and they could use different learning strategies for science or art subjects. With this concern, the result of this study will have a limited generalization.

It also should be acknowledged that self-reported data is subject to certain limitations, such as students' ability to accurately recall the experience and students' subjective feelings impacted by the time of the survey. In addition, as the surveys were not anonymous, students might have reported socially acceptable answers rather than their true feelings (Fulmer & Frijters, 2009).

This research did not use control experiments to eliminate other confounding variables. This study explored relationships between motivation and flipped learning, but did not prove cause and effect. Whether students in a non-flipped learning classroom have a higher or lower motivation is still unknown and more empirical studies are still needed in the field for assisting instructors who want to adopt this teaching style with better practices.

Another limitation was due to the fact that this study was only approved in two flipped classrooms. One course had been flipped for years, while it was the first time for the other one to flip. The instructor's inexperience with the flipped classroom design might have had some effects on this study. For example, some students asked the researcher "what is a flipped classroom?" On the other side, students reported heavy online workload for the HRAD course as well. There was no one model for flipped design and none of the course design was perfect that satisfied all the needs. In addition, both courses had small class sizes of around 30. The small sample size of 59 in this study might limit the generalizability of this study. Research suggested a sample size of 300 from the targeted population to have sufficient statistical power to draw strong conclusions (Bujang et al., 2017). While the sample size was not large enough to draw conclusions from the regression analysis, the pattern of predictive relationships is consistent with what the theory suggests.

Implications for Practice

This study was conducted in two flipped courses. The HRAD course had been flipped for more than three years. According to the HRAD professor, she was satisfied with the flipped design and she would not make any adjustments to the course structure. However, this was the first time for the RMRT professor to flip the course, and she mentioned that she had to lecture about two-thirds of the class time as some students were not prepared for the in-class activities. The pre-class activities requested students to read and watch the assigned materials before class and familiarize themselves with the learning content. In the HRAD course, the professor assigned before-class quizzes or reflection writing assignments to make sure students prepared for coming to class, while

the RMRT professor did not require any graded pre-class assignments. The researcher and the professor both observed that the RMRT students did not read the assigned materials to prepare for in-class activities.

Students' motivation in college classes could change over the semester (Christophel & Gorham, 1995). Different course implementation could also impact students' motivation (Bomia et al., 1997). It was possible that the flipped implementation teaching method influenced students' motivation over the semester. In this study, students' motivation could be different if it was measured at a different time, such as at the beginning or middle of the semester, which may influence the conclusion and findings. However, this study aimed to explore the relationships between students' motivation and their perspectives towards the flipped course design. Even though students' motivation could be different if measured at a different time, the researcher chose to measure at the end of the semester, when students had a comprehensive understanding of the course content and the flipped design, and were therefore able to reflect on their actual learning experience when responding to the questionnaire.

The key factor of a successful flipped classroom is students' preparation. Only when students are ready for in-class activities, will they have the chance to get the most out of a flipped class. If the students were not prepared, the instructor would have difficulties implementing the in-class activities and might have to use in-class time for lecture or other preparations to familiar students with learning materials, as the RMRT professor did in this study. Gilboy et al. (2015) suggested that some students will not be prepared for the in-class active learning strategies. Possible ways to make students learn the materials themselves before coming to class was to set up mandatory pre-class

assignments. The pre-class assignments should be assigned points that count towards their final grade of the course. The motivation and stimulation of getting a good grade of the class might reinforce students to spend more effort on preparing for the course. On another note, the relatively low use of the online materials in this study suggested that the instructional designers and instructors should not overwhelm students with too many online learning materials. Khanova et al. (2015) found that students prefer short online modules that are well organized with clear distinction between essential and supportive materials. This suggest that the online portions of a flipped classroom should be integrated with the face-to-face activities and not feel like a completely separate, fully online course.

Flipped classroom design is better applied to subjects that require students to integrate and apply the knowledge into real scenarios (Milman, 2012). The nature of flipped classroom design requires students to first familiar with learning content at their own pace before class and then left class time for activities that apply the knowledge (Gilboy et al., 2015). Interactive in-class activities should boost students' learning by explaining difficult and important concepts and clearing misunderstandings. It was noticed in this study that students want more in-class interactions with the instructors when they did not get enough. It is suggested for practitioners to keep in mind about the teacher's role in class activities. In a flipped instructional model, the teacher's role is different than in the traditional classroom to better facilitate students' active learning. Guidance is expected when students interact with the information or manipulate ideas and relate them to previous knowledge (King, 1993). Teachers should model, encourage, and monitor students' before-class preparation to get ready for in-class activities. Research

results have suggested that flipped model will work if students were well prepared (e.g., Burke & Fedorek, 2017). It is also important to have students' group activities with instructor facilitation and guidance. Students' constructive feedback is also valuable to continuously promote active learning and improve the effectiveness of a flipped model. In this study, if the RMRT students could have communicated with the professor about their limited understanding regarding how flipped designs work, the professor might have changed some of the course implementation to improve the effectiveness. Different levels of course structure has a significant impact on students' achievement, and more structure can improve student performance (Haak, HilleRisLambers, Pitre, & Freeman, 2011)

The instructional video is one of the popular methods that flipped course instructors use to introduce pre-class learning materials. Researchers noticed that having suitable amounts and lengths of the videos were important to have a successful flipped classroom. Research has shown that students reported 20 minutes to be an enjoyable length for paying close attention to an instructional video (Thompson et al., 2018). The HRAD course had eight out of 11 narrated PPT lectures that were over 20 minutes long. Some students in the HRAD group reported that the "outside of class long videos and assignments seems like an online course". It was essential to have appropriate online learning materials and out of class activities that would not overwhelm students workload. The overwhelmed online materials could lead to a lower use rate of the materials, which can result in lower academic achievement (Burke & Fedorek, 2017).

This study concluded that self-efficacy is a significant predictor of both students' learning achievement and flipped classroom perception scores. It was important to maintain student self-efficacy in a flipped learning environment as it was a significant

predictor for students' academic achievement. Research suggested that instructors should provide students with learning strategies as well as adequate feedback (Graham, 2007) to scaffold students' self-efficacy in learning environment, such as how to effectively view the lecture and what role should students have while participating in group activities. Girasoli and Hannafin (2008) demonstrated that using asynchronous audio/visual tools to support online instruction can promote self-efficacy, boost motivation, and ultimately improve performance. For example, instructors could set up online discussion boards, which allow students to have pre-class discussion or ask questions about misunderstanding. In this study, the HRAD professor had bonus points that counted almost 9% of the final grade, which could be a factor that influenced students' self-efficacy as well. Bandura (1977) suggested four ways to enhance self-efficacy beliefs through (a) performance accomplishments (successfully achieving the outcome), (b) vicarious experiences (observing others achieve the outcome), (c) verbal persuasion (encouragement, reassurance, motivational speech), and (d) emotional arousal (reducing physiological signs of anxiety). The bonus points assigned could be an encouragement for accomplishing extra learning tasks.

Implications for Further Study

As mentioned in the discussion that one limitation of the study is the log data may not truly reflect the effort students spent on the online course content. Embedding pre-class lectures and presentations into the learning management systems, so students viewed the materials within the browser would facilitate better data collection. Further techniques may be needed to record objective time spent or times visited log data to reflect students' use of online course materials. It was unexpected to find that students'

use of materials were mostly negative related to their motivational beliefs. More research is needed to explore students' motivational beliefs in relation to their use of online materials in flipped classrooms.

It should be noticed that this study was conducted in two different learning subjects with a sample size of 59. It will also be interesting to duplicate this research in a bigger classroom to investigate if similar results will be produced.

This study was conducted in a university setting, but it seems likely the findings and implications would apply to adolescent learners as well, such as flipped classroom implementation in middle school and high schools. Self-efficacy is an important contributor to academic development for learners of all ages (Bandura, 1977). More research is needed in the field regarding different populations. In addition, the motivational belief of self-efficacy was shown to be an important predictor for students' learning and perceptions, which helps point directions for further research regarding motivation in flipped classrooms.

Conclusions

Motivation displayed effects on students' learning in undergraduate flipped classrooms. Students have similar motivation patterns regarding their learning performance in flipped classrooms as in traditional or online classrooms. Overall, students' reported positive motivational beliefs towards a flipped classroom. Among the five motivational beliefs, self-efficacy appeared to be a significant predictor of students' academic learning performance and perceptions of flipped classrooms. Students' motivational beliefs of intrinsic value, task value, control of learning, and self-efficacy were significantly positively correlated to students' perspectives towards flipped

classrooms. However, students' motivation was not significantly correlated with their use of online material.

The influence of instructors' different implementation of flipped learning on students' motivation, learning performance, use of course materials, and perspectives on a flipped class was also explored. The findings suggested that instructors should set up pre-class activities related to credits that account for the course grade to reinforce students' effort spent on course preparation. Results of this study suggest that students' previous experiences of flipped classrooms and online learning may not always affect their motivational beliefs, learning performance, and perceptions of the course format in a flipped classroom. However, a large amount of online materials may cause fatigue and make students unwilling to use all the online materials. Overall, students and instructors presented positive attitudes towards flipped classroom design. The flipped classroom model is a valuable teaching strategy that can be applied at any educational level (Milman, 2012) to maximize learning time (Tucker, 2012), but continuing research is needed in the field to improve the effectiveness of this approach and facilitate learning among all students, including those with low self-efficacy beliefs or overall motivation. While the teacher's role may change from a "sage on the stage" to a "guide on the side", this role remains vitally important for facilitating in-class activities, scaffolding out-of-class preparation, and effectively implementing the flipped design.

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APPENDICES

APPENDIX A

FLIPPED LEARNING STUDY PARTICIPANT INFORMATION

Dear Students:

I am doing a research about the **flipped classroom.** I would like to ask for your participation in the study. As part of the study, you will be asked to fill out several questionnaires related to your motivation and attitude in this class. In addition, I will look at your course grades and how you use the course materials, such as how much time you spend in the Brightspace course site. All your responses are strictly confidential and only members of the research team will see your individual responses.
Before I do any analysis, I will de-identify everything by replacing your name with a code. Any reporting from this study will report class averages and general patterns, and not details on individual students. If you participate, you will receive individual feedback on your motivation that may be useful to you in your college career.

Your participation is voluntary and not related in any way to your grade in this class. You may decide to participate now but you can withdraw from the study at any time with no penalty.

The attached questionnaire asks you about **your motivation and attitudes** for work in HRAD 3213 Hospitality Management and Organizations class. The survey will take about 25-35 minutes to answer. By completing this survey, you will receive 5 bonus points.

There are no right or wrong answers to this questionnaire. This is not a test.

Please respond to the questionnaire as accurately as possible, reflecting your motivation and attitudes in this course. Your answers to this questionnaire will be analyzed by computer and stored confidentially.

You may contact either of the researchers at the following addresses with any concerns related to the research: Ying Xiu (yxiu@okstate.edu), or Dr. Penny Thompson (penny.thompson@okstate.edu)

If you have questions about your rights as a research volunteer, you may contact the IRB Office at 223 Scott Hall, Stillwater, OK 74078, 405-744-3377 or irb@okstate.edu
Please sign below if you would like to be involved in this study. Thank you for your cooperation.

☐ **By ticking this box, I would like to be involved in this study and give permission to access my course grades and Brighspace "click data," such as the how many times and how long that you visited the page.**

Name (Print) _____

Signature _____

Date _____

APPENDIX B

IRB APPROVAL

Oklahoma State University Institutional Review Board

Date:	Monday, October 9, 2017
IRB Application No	ED17106
Proposal Title:	Motivation in the Flipped Classroom
Reviewed and Processed as:	Exempt

Status Recommended by Reviewer(s): Approved Protocol Expires: 10/8/2020

Principal Investigator(s):

Ying Xiu
Stillwater, OK 74078

Penny Thompson
210 Willard Hall
Stillwater, OK 74078

The IRB application referenced above has been approved. It is the judgment of the reviewers that the rights and welfare of individuals who may be asked to participate in this study will be respected, and that the research will be conducted in a manner consistent with the IRB requirements as outlined in section 45 CFR 46.

☐ The final versions of any printed recruitment, consent and assent documents bearing the IRB approval stamp are attached to this letter. These are the versions that must be used during the study.

As Principal Investigator, it is your responsibility to do the following:

1. Conduct this study exactly as it has been approved. Any modifications to the research protocol must be submitted with the appropriate signatures for IRB approval. Protocol modifications requiring approval may include changes to the title, PI advisor, funding status or sponsor, subject population composition or size, recruitment, inclusion/exclusion criteria, research site, research procedures and consent/assent process or forms.
2. Submit a request for continuation if the study extends beyond the approval period. This continuation must receive IRB review and approval before the research can continue.
3. Report any adverse events to the IRB Chair promptly. Adverse events are those which are unanticipated and impact the subjects during the course of the research; and
4. Notify the IRB office in writing when your research project is complete.

Please note that approved protocols are subject to monitoring by the IRB and that the IRB office has the authority to inspect research records associated with this protocol at any time. If you have questions about the IRB procedures or need any assistance from the Board, please contact Dawnett Watkins 219 Scott Hall (phone: 405-744-5700, dawnett.watkins@okstate.edu).

Sincerely,

Hugh Crethar, Chair
Institutional Review Board

VITA

Ying Xiu

Candidate for the Degree of Educational Technology

Doctor of Philosophy

Thesis: TYPE FULL TITLE HERE IN ALL CAPS

Major Field: Educational Technology

Biographical:

Education:

Completed the requirements for the Doctor of Philosophy in Educational Technology at Oklahoma State University, Stillwater, Oklahoma in May, 2018.

Completed the requirements for the Master of Arts in Teaching English to Speakers of Other Languages at Arkansas Tech University, Russellville, Arkansas in June, 2013.

Completed the requirements for the Bachelor of Science in Educational Technology at Qingdao University, Qingdao, China in July, 2012.

Experience:

Oklahoma State University: Graduate Assistant
School of Educational Foundations, Leadership and Aviation
August, 2014 – May, 2018

University of Southern Indiana: Instructional Designer
Distance Learning
June, 2016 – August, 2016

Professional Memberships:

Association for Educational Communications and Technology (AECT)
American Educational Research Association (AERA)
Society of International Chinese in Educational Technology (SICET)