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The Combined Impact of the Flipped Classroom, Collaborative Learning, on Students' Learning of key Marketing Concepts

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The Combined Impact of the Flipped Classroom, Collaborative Learning, on Students' Learning of key Marketing Concepts

Abstract

Purpose of the Study: The overall purpose of this study was to investigate whether or not the incorporation of combined flipped classroom, and collaborative learning pedagogical schemes in two restructured sections of principles of marketing course, had any positive impact on students' learning of 100 key marketing concepts, processes, and strategies.

Results: By comparing the students' total assessment scores in Experimental and Control Group groups, it was concluded that the re-structured course had significantly improved students' learning of key marketing concepts, processes, and strategies.

Keywords

Flipped Classroom, Collaborative Marketing Plan, Collaborative learning, Marketing Key concepts

Introduction

An extensive search of the literature provides inadequate insight into experimentation with the pedagogical scheme known as the “flipped classroom” in the context of marketing education. It seems that in the field of marketing there is a deficiency of research addressing the flipped classroom in conjunction with the “collaborative learning” approach. The overall purpose of this study was to investigate whether or not a combination of the flipped-classroom and collaborative-learning schemes, in conjunction with a collaborative marketing plan, has any positive impact on students’ learning of 100 key marketing concepts, processes and strategies in an undergraduate Principles of Marketing course.

For this study a Static Group Comparison research design was used. During four consecutive semesters, two classes were restructured to incorporate the combined flipped-classroom and collaborative-learning pedagogical schemes. These classes were designated as the experimental group. Three other classes were designated as the control group. In these classes students were required to learn the key marketing concepts, processes and strategies by attending the regular classes and listening to traditional lectures.

A statistical comparison of the students’ total assessment scores in the experimental and control groups suggested that participation in the combined flipped-classroom and collaborative-learning process could assist the majority of students to significantly improve their learning of key marketing concepts, processes and strategies. Furthermore, students in the experimental group were able specifically to perform much better in their exams.

The following section will review the relevant literature; the ensuing sections will present the research methodology, findings, discussion, conclusions, limitations of this study, future research recommendations and additional reflections.

Literature review

The review of the literature consists of three interrelated parts:

- Part One discusses the essence of the flipped-classroom philosophy and its benefits and drawbacks from the perspective of students and faculty, and provides examples of implementation in several disciplines, including marketing.
- Part Two starts with a brief discussion of key characteristics of the philosophy of experiential learning, which traditionally has been regarded as antecedence of some newer and emerging concepts such as active learning and collaborative learning. Then, after a brief presentation of active learning, the discussion will focus on the collaborative-learning philosophy, and present the interconnectedness and consolidated perspectives of the flipped classroom, experiential learning, active learning and collaborative learning (Figure 1).
- Part Three discusses the interrelationship among the flipped classroom, collaborative learning and Bloom’s Revised Taxonomy; this interrelationship is shown in Figure 2, which has served as a blueprint to conduct this study.

Part one: The flipped classroom and its benefits and drawbacks

In the last 10 years, there has been a surge in the use of the “flipped” or “inverted” classroom approach in teaching (Bergmann & Sams 2012; Velegol et al. 2015; Arnold-Garza 2014; Cole 2009; Tucker 2012; Jinlei, Ying & Baohui 2012; Butt 2014; Findlay-Thompson & Mombourquette 2014). In this model, what is normally done in class and what is normally done outside of class, such as assignments or projects, are switched.

Flipping the classroom is emerging as a unique approach to improving learner retention and transfer, and making efficient use of class time (Estes et al. 2014). Using a flipped approach, students learn key concepts and terminologies before coming to the class, usually by using online technologies (e.g., Khan Academy, TED talks and YouTube). Rather than class time being used to present concepts and content, students are expected to engage with the content in an online form prior to coming to class, and thus prepared to actively apply their newly acquired knowledge via interactions in the classroom with other students and the instructor (Milman 2012).

In this type of learning environment, the instructor’s most important role is guiding students in thinking and discussion, as well as giving professional feedback and advice, thus allowing students to actively and interactively apply what they have learned in realistic, hands-on projects (Hwang & Wang 2015; Phillips & Trainor 2014; Jamaludin & Osman 2014).

The benefits and drawbacks of using a flipped classroom have been examined and documented from the viewpoints of both students and instructors. It has been reported that the use of the flipped-classroom style of learning and teaching offers numerous advantages, including helping to foster active learning (Jinlei et al. (2012) and promoting thinking inside and outside of the classroom (Herreid & Schiller 2013). Other benefits include increased student engagement, student-teacher feedback and self-paced learning have been cited (Mok 2014; Horn 2013; Goodwin & Miller 2013; Roehl, Reddy & Shannon, 2013; Sadaghiani 2012; Fulton 2012). Bergfjord and Heggernes (2016, p. 2, 7) reported on a trial of the flipped-classroom method in a strategic management class. A significant proportion of the direct instruction was moved out of the classroom in this trial, and a good deal of time in the classroom was spent on using concepts to solve assignment problems. Students reported that they were better prepared for lectures, were more satisfied with the course overall, and achieved slightly better grades.

Bishop and Verleger (2013) conducted survey of 24 studies of flipped classrooms. They classified the studies based on the type of in-class and out-of-class activities, the measures used to evaluate the study and methodological characteristics for each study. They concluded that the perceptions of students regarding the flipped classroom were mixed. They suggested that students preferred in-person lectures to video lectures, but they preferred interactive classroom activities over lectures. They recommended that future studies should use controlled experimental or quasi-experimental designs. It should be noted that quasi-experimental designs involve selecting experimental and control groups without any random processes, while true experimental designs incorporate random selection. Quasi-experimental designs are most frequently used when it is not feasible or practical for the researcher to use random assignment (Gribbons & Herman 1997).

However, there has also been some criticism of the flipped-classroom model of teaching and learning. It has been argued that the model can contribute to creating or exacerbating a digital divide,

particularly for students from low-income districts who already have only limited access to resources, and assumes that students will watch the lectures at home. Furthermore, some students will not be capable of managing their own work and time, and may come unprepared to class to participate in the active-learning (Arnold-Garza 2014; Herreid & Schiller 2013).

For faculty, the advantages of adopting a flipped classroom have been reported to include “efficient use of class time”, “increased one-on-one interaction between students and instructor enabling customisable and flexible instruction”, “forming a greater insight into students' grasp of information and learning as a result of increased student/teacher interaction” and “developing projects that actively engage students and bring real-life relevance to the subject” (Roehl et al. 2013; Overmyer 2012; Bergmann & Sams 2012; Fulton 2012; Cole 2009; Lage, Platt & Treglia 2000). Several disadvantages of adopting the flipped classroom have been reported as well. One major drawback from instructors' perspective is finding good-quality videos, as videos are the method of choice for delivering the out-of-class portion of the instruction. Other shortcomings identified include the quality of teacher-created videos, which has often been marginal, and the fact that such videos are time-intensive to create (Herreid & Schiller 2013).

Examples of implementing a flipped classroom

The flipped-classroom approach has been used in several disciplines including environmental and occupational health (Galway et al. 2014), renal pharmacotherapy (Pierce & Fox 2012), calculus proficiencies (Fulton 2012), introductory physics (Novak & Patterson 1998), introduction to the teaching profession (Vaughan 2014), Accounting (Phillips & Trainer 2014), introductory spreadsheets (Davies, Dean & Ball 2013), web design (Enfield 2013), programming (Mok 2014), language (Hung 2015), statistics (Touchton 2015), pharmaceuticals (McLaughlin et al. 2014) and strategic management (Bergfjord & Heggernes (2016), and in an engineering case study (Velegol et al. 2015). However, it seems that there is a dearth of research in addressing the experimental use of a flipped classroom in the teaching of marketing (Green 2015). Kurthakoti (2017, p. 150) has discussed his efforts at flipping marketing classrooms in both introductory and advanced courses and, based on his experiences, has attempted to develop a set of best practices that tend to be effective in undergraduate marketing classes.

It is noteworthy that during the literature review for this article, only two marketing-related empirical studies were found. Jarvis, Halvorson, Sadeque and Johnston (2014) proposed a Large Class Engagement (LCE) Model, which integrated high levels of student cognitive involvement and participation in large-class settings. They implemented their conceptual framework, using a flipped-classroom approach, in a foundational marketing course for 870 students. They concluded that students' collaboration in group projects, using a workshop approach, resulted in deeper learning of concepts and their application. They also concluded that the high levels of student-led engagement resulted in students achieving both higher test scores and higher overall scores.

Krueger and Storlie (2015, p.19) evaluated the implementation of a flipped-classroom approach in an Introduction to Marketing course, using a case-study methodology by flipping one section of a course but not the other. They concluded that using a flipped-classroom format for an introductory level class created a more positive student learning environment and increased involvement in the subject matter as measured by statistically significant higher student evaluation scores in the flipped classroom than in the control class and in previously taught conventional classes. The findings of above two studies resulted this study to use a comparable approach by combining ‘Flipped Classroom’, and ‘Collaborative Learning’ pedagogical schemes, in conjunction with developing a

collaborative marketing plan in order to find out their impact on students' learning of 100 key marketing concepts, processes, and strategies.

Part Two: the essence of collaborative learning

The antecedents of collaborative learning

Kolb (1984) helped to popularise the idea of experiential learning by drawing heavily on the work of Dewey (1963). Experiential learning occurs when students participate in activities, reflect upon those activities and incorporate their new understanding(s) into hands-on projects in a collaborative setting (Neill 2004). In the field of marketing, experiential learning has been incorporated in some courses such as Principles of Marketing, Principles of Selling, Sales Management and Services Marketing (Bobbitt, Inks, Kemp & Mayo 2000; Gremler, Hoffman, Keaveney & Wright 2000)

Some newer concepts emerging from the essence of experiential learning include active and collaborative learning (Adams & Slater 2002; Bonwell & Eison 1991). Active learning, which is often contrasted to the traditional lecture, in which students passively receive information from the instructor, involves students actively or experientially participating in the learning process. The core elements of active learning are student activity and engagement in the learning process. In other words, active learning requires students to do meaningful learning activities and reflect about what they are doing (Weltman 2007; Prince 2004; Bonwell & Eison 1991). Gaidis and Andrews (1990) have indicated that students learn best when they are actively involved in concrete experiences.

The concept of collaborative learning draws on Piaget's theory of active learning by stressing that learning occurs when learners act on and apply new ideas and concepts (Piaget & Duckworth 1970). Collaborative learning has been defined as "an instruction method in which students work in groups toward a common academic goal" (Gokhale 1995). The underlying premise of collaborative learning is based on consensus-building through cooperation by group members (Panitz 1999). Online collaborative learning has been further defined as "a learning process where two or more people work together online to create meaning, explore a topic, or improve skills" (Harasim, Hiltz, Teles & Turoff 1995).

The information-technology revolution has turned real-time collaboration into a reality. In this type of learning, students work collaboratively on a team project. This approach requires students to learn key concepts, terminologies and processes using the information-technology tools offered in a flipped classroom. The next step requires them to apply what they have learned in a real-world situation. During the process of collaborative, project-based learning, students need to divide the work and cooperate to complete the learning tasks (Chang & Lee 2010; Tucker 2012). The advantages of working collaboratively on a group project include "encouraging social interaction, teamwork and cultural diversity among students", "applying what they have learned" and "cultivating their analytical and judging abilities" (Du et al. 2014, Hwang et al. 2015). These discussions suggest that the four theories of learning are interconnected to form both theoretical and practical perspectives, as shown in Figure 1.

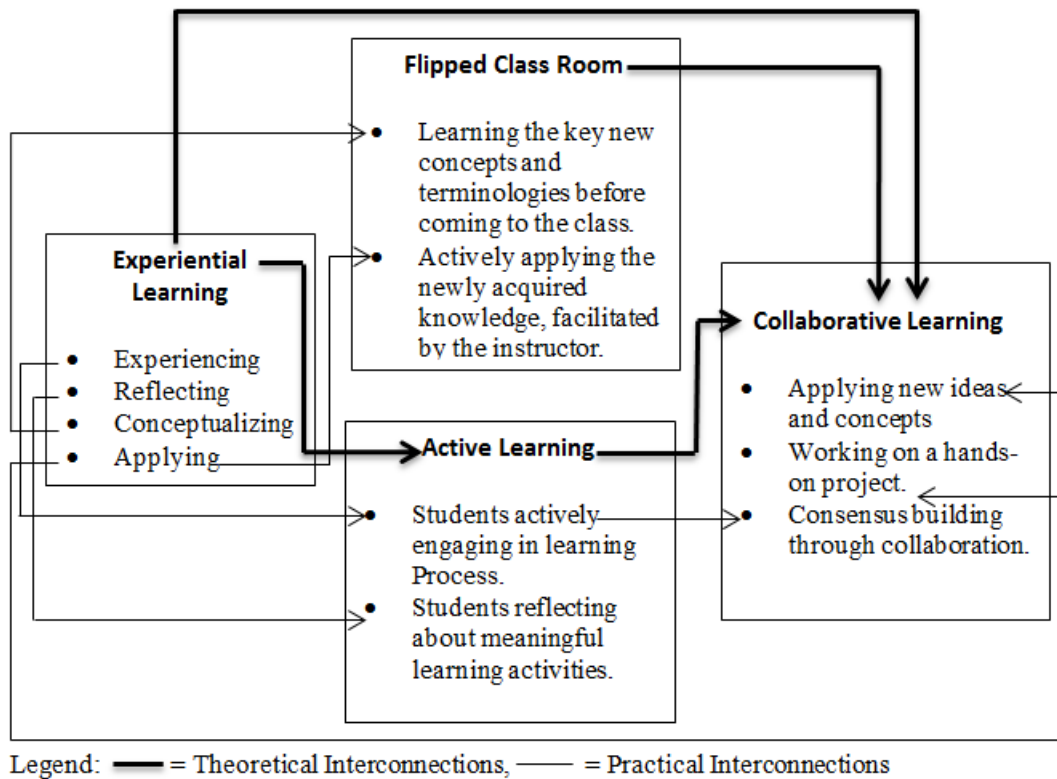


Figure 1: Interconnectedness of the flipped classroom and experiential, active and collaborative learning

Part Three: the interconnectedness of the flipped classroom, collaborative learning and Bloom’s Revised Taxonomy

The literature review above supports the argument that the concepts of the flipped classroom and collaborative learning can yield a synthesis that relates to Bloom’s Revised Taxonomy. Bloom’s Taxonomy of the Cognitive Domain (Anderson, Krathwohl & Bloom 2001) is a useful framework for determining which thinking skills to teach online and which to teach face to face in a flipped environment (Estes et al. 2014, p.4). The proposed synthesised conceptual framework, shown in Figure 2, was used as the blueprint for this study.

The conceptual framework shown in Figure 2 consists of three interrelated and integrated modules that constitute a flipped classroom: learning processes, assessment processes and collaborative-learning processes. One might rationally require students to learn, recall and comprehend the subject matter at a basic level online (Modules 1 and 2), then use higher-order thinking skills to apply, analyse, evaluate and create new material in synchronous collaborative meetings (Module 3). Galway et al. (2014, p.2) stated: “In terms of Bloom’s influential (revised) taxonomy of thinking and learning, the flipped classroom enables both higher and lower levels of cognitive work. More specifically, students do lower level cognitive work, i.e., the acquisition of knowledge,

independently and outside of class while higher-order cognitive work including knowledge application, analysis, and synthesis occurs during class time with the support of peers and instructors.”

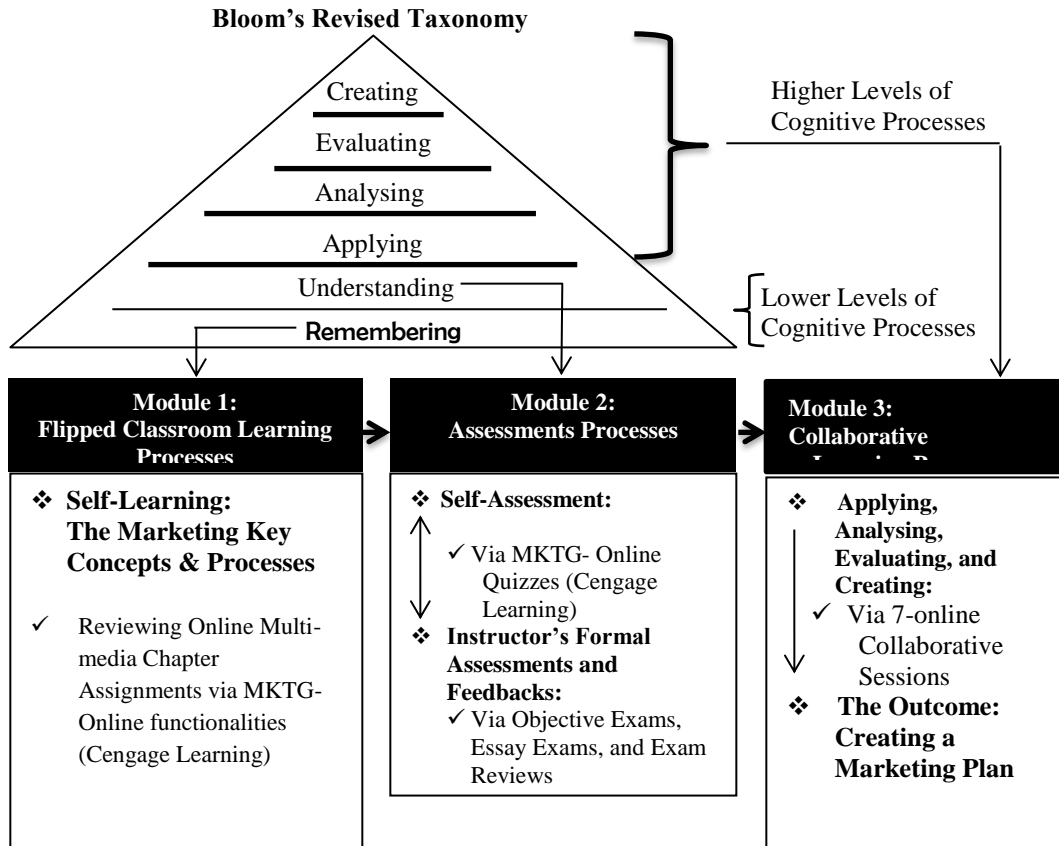


Figure 2. The interrelationship among Bloom's Revised Taxonomy, the flipped classroom and collaborative learning

For Module 1 (flipped-classroom learning processes), students used online information technologies (e.g., Cengage MKTG Online platform and functionalities) to learn 100 key marketing concepts, processes and strategies. The tools they used included reading interactive e-book assignments, listening to e-lectures, watching concept videos that highlighted key topics, watching company videos, reading company profiles and using “Study Bits” and flash cards. For Module 2 (assessment processes), students were required to take personalised online quizzes and read the corresponding explanations that clarified the correct and incorrect responses. They also used “Concept Tracker” to help them monitor their progress by taking formal online self-assessments. In addition, throughout the semester, students were also required to take five formal conventional exams corresponding to the required textbook chapters, as well as a comprehensive final exam prepared by the instructor. These procedures were used to ensure that students mastered the key concepts, processes and strategies before applying them to the hands-on collaborative marketing plan project in seven real-time collaborative sessions under the supervision of the instructor.

In Module 3 (collaborative-learning processes), students worked in teams in the role of a marketing department in charge of creating the next year's marketing plan for a new product and/or service for a Fortune 500 publically traded company. They completed this project over the course of seven collaborative sessions. Students were asked to read their chosen company's most recent posted annual report, on the basis of which they were asked to conduct analysis of their company's current situations as well as a SWOT (strengths, weaknesses, opportunities and threats) analysis to become familiar with the company's past and present situation. For each of the seven collaborative sessions, students received detailed predetermined objectives and descriptions of the required tasks to reach those objectives. The tasks for each session are summarised below:

- Session 1:** Select a Fortune 500 publicly traded company, and come up with an idea for a new product and/or service to be marketed during the next year.
- Session 2:** Conduct an analysis of the company's current marketing situation and perform a SWOT analysis.
- Session 3:** Formulate the company's new product/services objectives, target market(s), and competitive positioning strategy (or strategies) for the next year.
- Session 4:** Develop the next year's new product/services features, pricing and financial objectives and strategy (or strategies).
- Session 5:** Develop the next year's new product and/or services distribution strategy, including logistics and supply-chain requirements.
- Session 6:** Develop the next year's new product and/or services integrated marketing communication plan.
- Session 7:** Develop the next year's new product and/or services action programs, control measures and pro-forma profit and loss statement.

This project counted for about one-quarter of the overall course grade.

Research methodology

The Static Group Comparison Design

The Static Group Comparison Design is a research design consisting of two groups, the first of which receives a treatment (X) and is designated the experimental group, and the second of which does not, and is designated the control group. Post-test scores, designated here as O1 and O2 (observed values 1 and 2) were employed to measure the outcomes of the two groups (Churchill 1991, p.188-189). The Static Group Comparison Design is symbolically shown below:

EG: X O1
CG: O2

Where: EG = Experimental Group, CG = Control Group, X = Using Cengage mktg-Online Functionality combined with Collaborative Marketing Plan Project (Treatment), and O1 & O2 = Total Assessments Scores.

This study took place over the course of four semesters. Students completed five sections of an undergraduate Principles of Marketing course. The primary learning objective for all sections was "to develop an understanding of 100 key marketing concepts, processes and strategies" associated with the field of marketing, all of which were covered in the required textbook. Across all five

sections, everything was identical in terms of syllabus, learning objectives, learning outcomes, the required textbook and the types of traditional assessments.

Two sections of the classes, with a total of 76 students, were restructured to incorporate the combined flipped-classroom and collaborative-learning pedagogical schemes in relationship to the conceptual framework of Bloom's Revised Taxonomy. Those sections were designated as the Experimental Group (EG), in which students were required to learn 100 key marketing concepts, processes and strategies by themselves, in a restructured flipped-classroom environment.

Three other sections, with a total of 91 students, were designated as the control group. In control sections, the collaborative marketing plan project was not incorporated, and students were required to learn the key marketing concepts, processes and strategies by attending regular classes, listening to traditional lectures and taking traditional exams. Because everything else was equal in all five sections, any changes in students' total assessment scores in the experimental classes compared to the total assessments scores of the control classes, could be attributed to either the restructured flipped-classroom environment, their participation in the collaborative marketing plan project, which further reinforced their learning of marketing key concepts, strategies and processes, or both. The results of the preliminary and advanced analysis performed in this study is presented below.

Findings

Findings related to the implementation of Modules 1 and 2

Measuring the impact of the 'flipped classroom on students' learning of 100 key marketing concepts, processes and strategies

An appropriate measure of whether students achieved the objective of learning 100 key marketing concepts, processes and strategies was calculating the total assessment scores in both the unflipped Control Group (CG), and flipped Experimental Group (EG). For the Control Group, the total assessment score was calculated by adding the scores of 13 essay-type examinations, corresponding to the textbook chapters, to the scores of three formal examinations, including a comprehensive final exam prepared by the instructor. For Experimental Group, the total assessment score was calculated by adding the essay scores to the 12 self-assessment test scores, plus six formal multiple-choice examination scores, which included scores on a comprehensive exam. The total assessment grades for both CG and EG sections are shown in Figure 3.

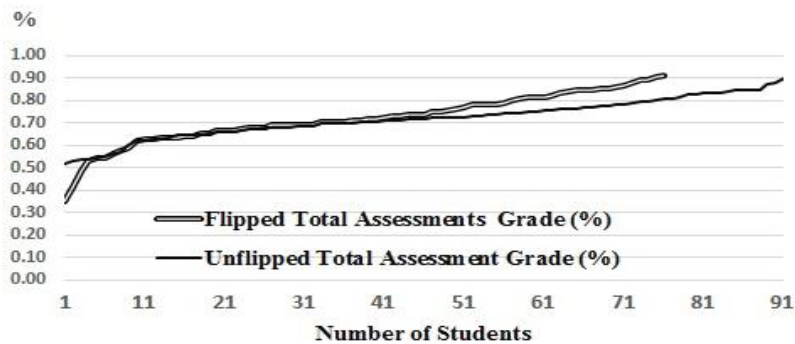


Figure 3. Flipped and Unflipped Total Assessment grades (%)

Figure 3 suggests that there were three clusters of students. The first group consisted of students who had obviously failed the assessments by earning less than 60% of the total assessment grade. The second cluster consisted of students who had performed at a level between 60% and 70%. For those students, it seems that the type of class did not make much difference. The third cluster consisted of students who had passed the course by scoring above 70%. Students in the flipped sections scored significantly higher than those in the unflipped classes. Therefore, for the majority of students, their participation in flipped classrooms triggered better performance in exams. To substantiate this proposition, a t-test for equality of means of ‘Flipped Total Assessments Grades’ and ‘Unflipped Total Assessments Grades’ was performed. The hypothesis of equality of means was rejected ($t = 22.053$, $d.f = 165$, $\text{Sig. 2-tailed} = 0.00$).

Findings related to the implementation of Module 3

Measuring the impact of the ‘Collaborative Marketing Plan Project’ on the learning of 100 key marketing concepts, processes and strategies

Figure 4 portrays the relationships of the grades for the ‘Flipped Total Assessment Grade’ and ‘Collaborative Marketing Plan Project Grade’ project. It is reasonable to presume that students’ engagement in the Collaborative Marketing Plan Project partially contributed to their superior performances on exams.

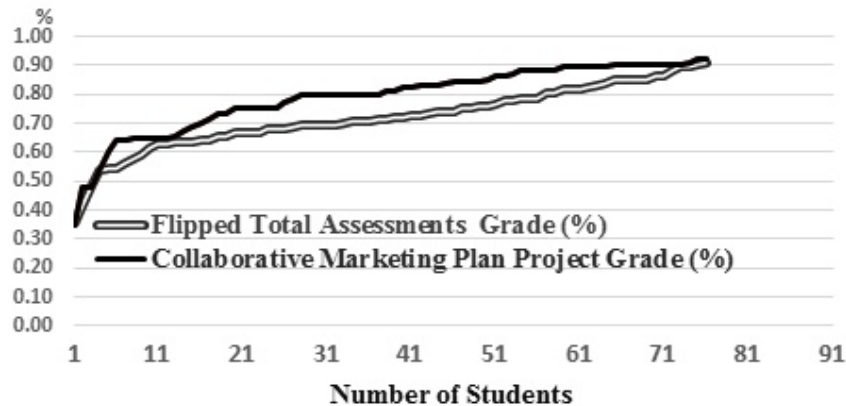


Figure 4. Flipped Total Assessment Grades versus Collaborative Marketing Plan Project grades (%)

A comparison of the two curves in Figure 4 suggests that there is a strong and positive correlation between the ‘Flipped Total Assessment Grade, and ‘Collaborative Marketing Plan Project Grade’. The Pearson Correlation Coefficient measures the degree of association between two variables. The correlation analysis between these variables indicated that correlation was equal to .964. The result also indicated that the Pearson Correlation Coefficient was statistically significant ($p\text{-value} = .000$).

Factor analysis: the combined effects

Because a t-test indicated that a statistically significant difference between ‘Flipped Total Assessment Grades’ and ‘Unflipped Total Assessment Grades’ does exist, and because the

correlation analysis reinforced that conclusion, two sets of factor analysis were performed to discover the underlying reasons (Table 1). In factor analysis, the co-variation among the variables is described in terms of a small number of factors. Each factor captures a certain amount of the overall variance in the observed variables, and the factors are always listed in order of how much variation they explain (Churchill 1991, pp.896-897). The total variances explained by factors extracted for the control and experimental groups were 65.59% and 67.24% respectively. The comparison of Rotated Factors for unflipped and flipped courses demonstrated the existence of a set of common underlying factors, which was named “assessment factors”.

Table 1: Varimax Orthogonal Rotated Factors

Flipped Total Assessment Grades (Converged in 10 Iterations)						Unflipped Total Assessment Grades (Converged in 3 Iterations)		
	Assessment Factors				Unique Factor		Assessment Factors	
	Formal Assessment (Standard Exams)	Self-Assessment					F1	F2
	F1	F2	F3	F4	F5			
CHSA3				.817		E1	.629	
CHSA4				.536		E2	.726	
CHSA7				.582		E3	.867	
CHSA9				.560		E4	.754	
CHSA2			.744			E5	.881	
CHSA5			.743			E6	.788	
CHSA8			.549			E7	.765	
CHSA11			.561			E8	.829	
CHSA1		.514				E9	.819	
CHSA6		.793				E10	.811	
CHSA10		.728				E11	.792	
CHSA12		.747				E12	.736	
Ex1	.673					E13	.819	
Ex2	.783					EX1		.855
Ex3	.866					EX2		.828
Ex4	.671					FX		.853
Ex5	.777							
FX	.874							
CMPP					.765			
Legend: CHSA = Chapters Self-Assessment, Ex1-Ex5 = Exam, FX = Final Exam CMPP = Collaborative Marketing Plan Project F1 = Factor 1: Formal Assessment Standard Exams F2 = Factor 2: Sales Promotion & Pricing F3 = Factor 3: Supply Chain Management & Social Media F4 = Factor 4: Product Management F5 = Factor 5: Collaborative Marketing Plan Project						Legend: E1-E13 = Essay Exams EX1, EX 2 = Multiple Choice Questions Exams FX = Final Exam. F1 = Factor 1: Authorial Assessment F2 = Factor 2: Formal Assessment		

In factor analysis, it is customary to examine the types of variables that have been heavily loaded on the corresponding factor in order to name that factor. In the unflipped sections, there were two assessment factors: Authorial Assessment (so named because all loaded numbers pertained to essay exams prepared by the author of this article) and Formal Assessment (so named because all loaded

numbers pertained to standard types of exams, such as multiple choice). In the flipped Experimental Group sections, five factors were identified: Formal Assessment (so named because all loaded numbers pertained to standard types of exams, such as multiple choice); Sales Promotion and Pricing, Supply Chain Management and Social Media, which were related to self-assessment exams on those topics that had been generated using the MKTG Online software package; and Social Media. It is worth noting that in the flipped Experimental Group sections a unique factor was extracted that was loaded only on the 'Collaborative Marketing Plan Project'.

Discussion

The following can be considered the distinguishing ways this research has added to the literature referenced in previous section:

1. The literature review established that many studies have reported on implementations of either flipped classrooms or collaborative learning. However, those studies have explored each pedagogy in isolation from the other, which has not yielded an adequate understanding of how they are connected. One of the theoretical contributions of this study is establishing the interconnectedness between the theories of experiential learning, active learning, the flipped classroom and collaborative learning (Figure 1). The second conceptual contribution is synthesising the flipped-classroom and collaborative-learning frameworks in relationship to Bloom's Revised Taxonomy (Figure 2).
2. The literature review also demonstrated that, in the field of marketing, there are at least three research deficiencies:
 - Presenting either empirical or theoretical work that unpacks the practicalities around flipped classrooms from a marketing educator's perspective (Green 2015, p.179).
 - Not using controlled experimental or quasi-experimental designs to measure the outcome of applying a flipped-classroom scheme (Bishop & Verleger 2013).
 - Applying a combined model of flipped-classroom and collaborative-learning pedagogical schemes.

This study has addressed all three deficiencies by combining the flipped-classroom and collaborative-learning frameworks, using a quasi-experimental design and empirically measuring the outcomes of experimentation.

The literature-review findings and the results of this empirical study revealed that educational outcomes improve when students use a multifaceted approach in their learning, and when the emphasis is on higher levels of cognitive processes rather than rote learning. The combined flipped-classroom and collaborative-learning pedagogical scheme, used in this study in conjunction with the task of developing a collaborative marketing plan, created the desired multifaceted environment for students to learn and apply 100 key marketing concepts, processes and strategies. The approach was beneficial, because it facilitated students to engage with the subject content in the context of a flipped classroom, and to engage in interpersonal interactions with peers via the semester-long collaborative project.

The findings related to students' learning of 100 key marketing concepts, processes and strategies were associated with the implementation of Modules 1 and 2 by students enrolled in the experimental (flipped-classroom) sections. Those findings, which are graphically shown in Figures 3 and 4, clearly show that students in the flipped sections who scored above 70% also scored significantly higher in their total assessment scores and their collaborative marketing plan projects than the students in the control (unflipped) sections.

To achieve this type of improvement, students should be willing to spend additional time engaging with self-learning processes. Interestingly, the logs of the MKTG Online package indicated that students spent from a minimum of three to a maximum of 51 total hours using online technologies in an effort to learn the key marketing concepts, processes and strategies. Nine out of 76 students in the flipped sections (close to 12%) spent fewer than 11 total hours on online assignments; these students received a grade of D, which required them to re-take the course. By contrast, the 85% of the students who spent many more hours on online assignments earned grades of C, B or A in all assessments. Those students demonstrated that they were capable of using information technologies on their own to learn the required key concepts, processes and strategies in an introductory marketing course, then to apply them successfully in a realistic collaborative project.

The results of this experimental study, particularly the factor analysis shown in Table 1, revealed that the implementation of combined flipped-classroom and collaborative-learning pedagogical schemes, in conjunction with a semester-long collaborative project that demanded a higher level of cognitive processes to implement the tasks encompassed in Module 3 (Figure 1), can significantly improve students' learning of key marketing concepts, processes and strategies.

The students' feedback at the end of the semester indicated that their participation in the collaborative project had a positive impact on their comprehension of the key marketing concepts, processes and strategies. Most of them indicated that the collaborative project was immensely useful in placing classroom material in a meaningful context and improving their ability to apply what they had learned.

The results of the factor analysis presented in Table 1 also clearly show that the collaborative marketing plan project occupied a unique position in the students' minds. This may be because it gave students opportunities to analyse, synthesise, and evaluate ideas jointly as they implemented the project, as shown in Module 3. Another reason may be that it engaged them in higher levels of cognitive processes under Bloom's Revised Taxonomy (Figure 1). This group interaction may have helped students learn from each other's knowledge and proficiencies.

It is worth noting that based on the author's estimation, students spent, on average, close to 143 total hours in reading the syllabus and textbook, studying the tutorials, completing online assignments, taking the required quizzes and exams, selecting a Fortune 500 company, reading its most recent annual report, participating in seven mandatory collaborative sessions to develop the components of their marketing plan and, finally, preparing the written marketing plan itself.

Conclusions, limitations, and future research recommendations

Conclusions

The students' feedback at the end of semester indicated that those in the flipped sections perceived them as very demanding and challenging. However, the majority of students liked the restructured format, particularly the Collaborative Marketing Plan Project. Students also stated that they had learned a great deal about marketing principles and concepts, and gave the impression that the course convinced them to have newfound respect for certain areas of study (e.g., creating a marketing plan through collaboration).

This study shows that participation in the Collaborative Marketing Plan Project, which required students to work together intensively over an entire semester, promoted the development of students' critical thinking through the discussion and consideration of others' ideas. The students' feedback at the end of semester revealed that the project helped them to better understand the material, and stimulated their thinking, as validated by the findings shown in Figure 4. The students' feedback was consistent with Bruner's (1985, p.34) contention that cooperative learning methods improve problem-solving strategies because the students are confronted with different interpretations of the given situation. The peer-support system makes it possible for learners to internalise both external knowledge and critical-thinking skills, and to convert them into tools for intellectual functioning.

The results of this study suggest that if students are to perceive a collaborative project as being of high quality, all relevant information, reading assignments, tutorials and online assignments should be carefully prepared in advance and communicated effectively to the students. The collaborative project objectives need to be unambiguous and the specific tasks in each required collaborative session must be delineated clearly. The collaborative project should also be capable of developing and enhancing students' leadership and communication skills, and should facilitate their ability to work well with others in the group. For the flipped sections, the instructor prepared a seven page (single-spaced), all-encompassing guideline and gave it to the students as a blueprint for collaborative project. The project guideline required the students, through seven collaborative sessions starting in mid-September and finishing toward the first week of December, to perform 19 detailed and specific tasks to complete the project; these tasks were closely integrated with the required textbook for the subject. It is highly recommended that a collaborative comprehensive group project consist of many interrelated components and be spread across the semester, as opposed to requiring students to prepare the final report, in its entirety, during the last few weeks of the semester.

Limitations

The Static Group Comparison Design used in this study has some limitations. There are three fundamental sources of extraneous error in the design:

1. There is no way of ensuring that the groups were equivalent prior to the comparison. Allowing students to assign themselves to either the Control Group (CG) and Experimental Group (EG) may have resulted in groups that were not equivalent. Consequently, extraneous variables such as students' socioeconomic characteristics may have varied from one section to another, and those characteristics may have affected the learning process.
2. No pre-tests were conducted to determine students' existing knowledge of marketing before taking the course.

3. Some students, particularly those who worked full-time in the field of marketing, may have learned the key marketing concepts and processes in their working context, and the flipped structure may not have played a significant role in their learning process.

Future research recommendations

Randomisation when assigning the students to the Control Group (CG) and Experimental Group (EG) would make the results obtained from true experimental designs more valid than using a Static Group Comparison Design. A before-and-after with a control-group design can be depicted as:

EG: (R) O1 X O2
CG: (R) O3 O4

The above design is ideal because the students are randomly (R) assigned to the control (CG) and experimental (EG) groups based on external criteria such as socioeconomic characteristics. The second desirable characteristic is the existence of before (O1 and O3) and after (O2 and O4) measurements, which permits an estimation of the pure effect of experimentation. This is because the difference between O4 and O3 will reflect the effects of the extraneous influences, whereas the difference between O2 and O1 will reflect the effect of experimentation. Thus, by definition, $(O2 - O1) - (O4 - O3)$ will measure the pure impact of experimentation.

Future research should strive to collect students' socioeconomic and other characteristics, which would allow the impact of age, gender, number of hours spent working and academic major on experimentation to be measured.

Additional reflections

If one of the primary goals of instruction is to enhance critical thinking, then collaborative learning has the potential to be exceptionally beneficial. As Gokhale (1995, p.30) stated, "the instructor's role is not to transmit information, but to serve as a facilitator for learning. This involves creating and managing meaningful learning experiences and stimulating students' thinking through real world problems". Creating such a learning environment should also involve reflecting on Roehl and Shannon's (2013, p.44) assertion that the introduction of any new strategy requires a shift in the minds of both educators and students.

Students should expect a significant change in their attitude and study habits during their individual online learning activities (Module 1), and particularly during their collaborative-learning sessions (Module 3). Some students may be apprehensive during participation in group learning activities, particularly if they prefer working by themselves. During this study, the most important impediment students faced was scheduling the meetings among themselves, given that many of them were carrying a maximum load of courses, and at the same time trying to meet work and family demands. Thus it is highly recommended that students' collaborative sessions be scheduled during regular class time.

Educators should expect to spend a significant amount of effort ahead of time to create and implement a practical and constructive flipped classroom in conjunction with collaborative-learning activities. The author of this article spent more than 218 hours to plan and implement the restructured flipped sections. Nevertheless, the rewards of witnessing students acquire the key marketing

concepts, processes and strategies counterbalanced the extra time spent in restructuring the course, especially when its implementation also created a significantly positive change in students' perceptions of the instructor's teaching effectiveness.

More than 300 colleges and universities across the country are using the Individual Development and Educational Assessment (IDEA) Student Ratings System to provide students with an opportunity to submit feedback on their direct course experience. Our department is using the following three learning objectives, which should be rated as "essential", from the IDEA Student Ratings System for the Principles of Marketing course used in this study:

1. Gaining factual knowledge (terminology, classifications, methods, trends)
2. Learning fundamental principles, generalisations or theories
3. Acquiring skills in working with others as a member of a team.

In the flipped sections of courses, students gave scores of 4.3, 4.5 and 4.6 (using a scale of 1-5, where 5 is the most favourable) for items 1, 2 and 3 respectively.

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