

PowerPoint in Accounting Classrooms: Constructive or Destructive?

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Abstract

This research investigated the impact of two teaching methodologies, PowerPoint and traditional, on materials' understandability, the teaching/learning process, the students' attitude towards and preference for them, as well as their impact on students' performance in the Financial Accounting II course at XYZ University, in Lebanon. A self-completion questionnaire was distributed to 428 students. SPSS was employed to code the data and analyze it using the factor analysis and the Independent T-test. Results reflected a greater material understandability and a more effective teaching/learning process for the lectures explained with the traditional methodology versus PPT. However, no difference was found in students' attitude towards the two teaching methodologies in terms of entertainment and dullness. Furthermore, students stated their preference for the traditional methodology in accounting courses. Finally, an ordinary least regression with the students' grade as the dependent variable shows that PPT negatively affects students' performance. Overall, the results suggest a convergence between the students' subjective and objective performance.

Keywords: Accounting Education; PowerPoint; Traditional methodology; Materials' Understandability; Teaching/Learning Process; Students' Attitudes, preference and performance

Introduction

Earlier, many lectures were presented on a chalkboard, whiteboard, or by transparencies on an overhead projector. In recent years, technology started to make a significant presence in classrooms and education technology becomes a "necessity" (Thomas, 2002, p.1). One of the most predominant types of technology used in the classroom is projecting information directly from a computer into a screen. The market leader in computerized multimedia presentations is Microsoft PowerPoint, which controls ninety seven percent of the presentation market (McCannon and Morse, 1999). In fact, Microsoft estimates that over 30 million presentations take place a day and that PowerPoint software is on 250 million computers worldwide (Amare, 2006).

Higher education has not been immune for the growing influence of PowerPoint. In fact, many universities are spending lots of money to equip their rooms with the technology necessary to display information in such a way (Atkins-Sayre et al., 1998), which makes it possible for all instructors to make computerized multimedia presentations. Along with its exploding growth, PowerPoint presentations have produced a growing body of criticism. The most prominent critic is Edward Tufte. In his monograph 'The Cognitive Style of PowerPoint', Edward Tufte (2003) argues that PowerPoint is "making us stupid, degrading the quality and credibility of our communication, turning us into bores, wasting our colleagues' time" (p. 24). Some agree with Tufte by accusing PowerPoint of negatively editing our ideas (Parker, 2001), asking "Is PowerPoint the Devil?" (Keller, 2003), requesting that PowerPoint "die in peace" (Simons, 2002, p.6), and referring to the PowerPoint as "insidious tread" (Bly, 2001, p.1). Furthermore, New York Times issued an article entitled "PowerPoint Makes You Dumb" (Thomson, 2003) and Fortune 500 Company banned the use of PowerPoint in its presentation (Numberg, 1999).

Many professors are switching from the traditional form of teaching of chalk and talk to computer- assisted presentations and they even attempted to move to a paperless classroom (Navarro, 1998). Previously, the new method required the instructor to spend time preparing slide presentations and organizing them. In recent years, this method is becoming easier and less costly to use, as more and more textbooks are packed with computer generated slides. Even some administrators are pushing instructors to use this technology (Carlson, 2002).

With the Power-point slides easily used by professors, there is a debate in the educational literature over whether PowerPoint is beneficial to students and the question remains: how does it affect students? In this regard, most research studies have been done in Western societies and Russia and the results were mixed. Relatively little is known about this issue in developing countries in general and in Lebanon in particular. Therefore, this paper will address this issue empirically by testing the impact of the PowerPoint presentation on students' attitude and performance in Lebanon and will hope to fill in this gap.

Literature Review

In recent years, the usage of PowerPoint in the classrooms has increased significantly, which has attracted many researchers to test its effect in education. Some of the studies tried to measure the effect of PowerPoint on the students' attitudes and behaviors, while others focused on its effect on the students' academic performance. One of the main features of PowerPoint is that it provides a structure to a presentation (Szabo and Hastings, 2000), facilitates the order and the pacing of the lecture (Hlynka and Mason, 1998) and provides a path through which the most important points are highlighted (Harknett and Cobane, 1997). Since the organizational structure of instructional material is related to students' understanding (Miller and McCown, 1986, cited in Susskind, 2005) and their materials' retention (Garner, 1992, cited in Susskind, 2005), PowerPoint should affect students' learning. This is supported by Harknett and Cobane (1997) who found out that visual emphasis in PowerPoint helps students recall the materials.

Since PowerPoint is considered as a more efficient time management strategy in comparison to writing on whiteboards (Daniels, 1999 and Mantei, 2000), writing time will be saved and the lecture may flow better. Furthermore, PowerPoint presentations have the advantage of having strong colors, gradual building of text, simple animations of diagram, and easiness for simple editing and updating, thus they provide significant time and force savings (Lowry, 1999).

An extensive body of research regarding the effect of PowerPoint centers around the students' attitudes and behavior, and the findings look consistent. Virtually, most of the studies have shown that students respond positively to the use of PowerPoint in the classroom and display positive attitudes when lectures are accompanied by PowerPoint presentations (Atkins-Sayre et al., 1998; Bartsch and Cobern, 2003; Butler and Mautz, 1996; Daniels, 1999; Frey and Birnbaum, 2002; Harknett and Cobane, 1997; Kask, 2000; Lowry, 1999; Mantei, 2000; McConnell, 1996; Nowaczyk, et al., 1998; Nouri and Shahid, 2005; Pippert and Moore 1999; Sammons, 1997; Susskind, 2005; and Szabo and Hastings, 2000). For example, Daniels (1999) stated that students' reaction to PowerPoint presentation was "overwhelmingly positive".

Among the positive attitudes, PowerPoint presentations are perceived as more interesting and entertaining (Atkins-Sayre et al., 1998; Butler and Mautz, 1996; Frey and Birnbaum, 2002; Mantei, 2000; Nouri and Shahid, 2005; Nowaczyk et al., 1998; Parks, 1999; Perry and Perry, 1998; Pippert and Moore, 1999; Sammons, 1995; Susskind, 2005; and Szabo and Hastings, 2000), better structured and organized (Szabo and Hastings, 2000) as well as emphasizing key points more efficiently (Frey and Birnbaum, 2002; Szabo and Hastings, 2000; and Nouri and Shahid, 2005) than traditional lectures. Due to its better organization, students feel that it is easier for them to follow and understand the materials explained with PowerPoint (Atkins-Sayre et al., 1998; Kask, 2000; Mantei, 2000; Nowaczyk et al., 1998; and Szabo and Hastings, 2000) and to take notes (Frey and Birnbaum, 2002; Kask, 2000, and Susskind, 2005), which in turn, helps them to organize, understand, and use these notes for test preparation. As PowerPoint allows information to be easily presented in bulleted format, students may feel more confident, believing that they are recording the main points of the lecture. Furthermore, students reported that the use of PowerPoint make them learn the course material more effectively (Atkins-Sayre et al., 1998; Bartsch and Cobern, 2003; Nowaczyk et al., 1998; Perry and Perry, 1998; Pippert and Moore, 1999; Sammons, 1995; Susskind, 2005; and Szabo and Hastings, 2000 in their first experiment). Students revealed also their higher motivation to attend such classes (Sugahara and Boland, 2006).

In general, students show more preference for PowerPoint presentations (Daniels 1999; Frey and Birnbaum, 2002; Perry and Perry, 1998; Susskind and Gurien, 1999; and West, 1997).

Most of these studies used a two-group test experimental design in which one group receives instruction using PowerPoint while the other group receives instruction using traditional method. However, some studies employed one treatment group, in which part of the course is presented with PowerPoint and the other part without PowerPoint. In these studies, it is hard to determine whether the difference in students' attitudes is due to the teaching methodology or to the level of the difficulty of the material. Other studies asked their students to compare the current class to other courses that employed traditional lectures. Since the traditional classes were for different courses than the PowerPoint classes, the results might be dependent on the course, rather than on the methodology employed.

On the negative side, students claimed they did not feel worse missing PowerPoint lectures. Since it is easier to take notes when PowerPoint lectures are used, students might feel that it is less detrimental to skip the class since they can borrow someone else's notes. Thus, students have less negative ramification of missing these classes (Susskind, 2005). Other studies reported that lectures with PowerPoint are viewed as more pre-planned, less spontaneous and fewer tangents. Because the sequence of slides makes it hard to jump from one point to another, spontaneity may have been reduced in the PowerPoint lectures (Hlynka and Mason, 1998; and Parks, 1999). Due to the formal structure of PowerPoint presentations, students may have been less willing to interrupt the professor (Nowaczyk et al., 1998), thus reducing the number of tangents they might introduce. With PowerPoint, students indicated some dissatisfaction with the classroom interaction. Studies also found that PowerPoint decreases the teacher-student interaction (Pippert and Moore, 1999), makes the students sleepy (Parks, 1999), and depersonalizes the class (Sammons, 1995).

Students might feel sleepy due to the lights that need to be dimmed in the classroom for the PowerPoint presentation to be clearer on the screen. This screen becomes the focus point at which students stay staring at. Thus, students' interaction becomes with the screen rather than with their professor, which in turn influences the class dynamics and questions the efficiency of the teaching/learning process. Here pedagogical issues are raised, refusing to consider teaching a show (Ferreira, 2010). In such classrooms, students become reluctant to take note, believing that all what is required is there on the slides. This misperception hinders learning, as Ferreira (2010) argues that access to information is not equal to knowledge; but what is crucial is the thinking process that lies behind decisions regarding the notes worth taking. Here, the concept of active and passive learning is highlighted. Active learning occurs when students are involved in the session, whereas passive learning is when students just listen to what is said in the lecture without participating (Hermanson, 1994, cited in Nouri and Shahid, 2008). Active learning succeeds when notes are not given to students, which force them to take notes themselves, thus making them more active and involved (Nouri and Shahid, 2005).

Brown (2004) stated that active learning, which promotes writing, affects positively students' deep understanding. Recitation is found to be the most effective tool for transferring materials from the short-term memory to the long-term one. Recitation could be in thinking about the material, writing it or saying it loud; however, the last two techniques are the most effective due to the fact that they "involve more electrical muscle movement messages to the brain which are known to increase mental response and recording" (Intelligence Inc. The Principle of Recitation, quoted in Nouri and Shahid, 2008, p.104). To find out its impact on students' performance, Nouri and Shahid (2008) conducted their study in two classes of Accounting II with teachers employing PPT, where the first group of students was given the notes prior to each session and the second group did not receive notes beforehand. Results showed no impact on students' performance in exams, but instructors have been evaluated by their students differently. Teachers, who did not supply their students with notes before each class, were judged by their students as more efficient and more effective.

Moreover, students receiving the PPT presentation before or after the class are more inclined to miss the session. Steven Strand, academic administrator in the life sciences, core curriculum program at the University of California at Los Angeles stated that when he started using PPT and uploading the slides on the Web, students' attendance dropped by 20% (Young, 2004). To overcome this problem and induce students to attend regularly, Young (2004) argued that teachers include riddles with missing answers, to be answered during the lecture. On the other hand, there has been a lack of consensus on whether PowerPoint improves students' academic performance and studies did not converge on a single conclusion.

Several studies argue that graphics improve student recall (Harknett and Cobane, 1997; Lowry, 1999; and Szabo and Hasting, 2000, in their second experiment) and that PowerPoint enhances students' performance (Kask, 2000 (female students); Lowry, 1999; Mantei, 2000; and Szabo and Hasting, 2000, in their second experiment), whereas, others have found that the use of PowerPoint is not associated with a significant improvement in students' performance (Bartsch and Cobern, 2003; Daniels, 1999; Harknett and Cobane, 1997; Kask, 2000 (male students); Rankin and Hoas, 2001; Stoloff, 1995; West, 1997; and Szabo and Hastings, 2000, in their first and third experiments). Few studies only, found a decrease in students' performance when PowerPoint was used. For instance, students' performance in the Social Psychology course dropped by 10% when lessons are presented by PowerPoint in comparison to when the lessons are presented on the board (Bartsch and Cobern, 2003). Amare (2006) found that students' performance was higher in the sections using the traditional methodology, although most students stressed their preference for PowerPoint. Similar results were obtained by Sosin et al. (2004).

The contradicting results may be due to the different methodologies employed and the different disciplines studied. Studies that examined the pedagogical effect of PowerPoint used a counterbalanced research in which each group was exposed to many methodologies at the same time. For example, in Szabo and Hasting's research (2000), the instructor taught one part of the course with overhead and chalkboard, another part with PowerPoint, and the last part with PowerPoint and lecture notes. They found that students' performance for the overhead/chalkboard condition was much lower than that for PowerPoint. However, this particular design suffers from an obvious internal validity; due to the fact that content of the lectures are different, thus, there is no way to tell if the differences in the classroom methodology or classroom materials produced the differences in students' performance.

The most commonly employed approach used is to contrast students' performance across an entire course taught with or without PowerPoint. The majority of the studies employing this methodology have found no significant impact of PowerPoint on student's learning outcomes with the exception of few studies which reached contrary conclusions (Jensen and Sandlin, 1992; Lowry, 1999; Mantei, 2000; and Wilmoth and Wybraniec, 1998). However, it is worth noting here that Jensen and Sandlin's (1992) findings were based on a fairly small sample ($n=34$). In the studies that reported learning improvement, with the exception of Lowry (1999), students who were taught with PowerPoint had access to the lecture notes, whereas students in traditional classrooms lacked access to such notes (Mantei, 2000; Weinraub, 1998; and Wilmoth and Wybraniec, 1998). On the other hand, in the studies that found no performance improvement, students had no access to lecture slides. Consequently, the results could have been due to PowerPoint, the notes, or the combination of both. In addition to the variation caused by the course type or teaching methodology, most of the studies with the exception of Sosin et al. (2004), examined the results of courses taught by a single professor. This can create a bias since students' performance may depend on the teaching style used by a particular professor.

The impact of PowerPoint presentations in the accounting lessons was also studied by Boyce (1999), Butler and Mautz (1996), Jensen and Sandlin (1992), Nouri and Shahid (2005) and Sugahara and Boland (2006). Findings revealed that PowerPoint positively contributes to the learning motivation and academic performance (Jensen and Sandlin, 1992; and Boyce 1999) and that students display a positive attitude towards the lecturer and the material (Butler and Mautz, 1996). Furthermore, PowerPoint presentations are found to develop the short-term memory (Butler and Mautz, 1996; and Nouri and Shahid 2005) with no effect on the long-term one (Nouri and Shahid, 2005). Outside the United States, Sugahara and Boland (2006) conducted a research in Hiroshima University and found that the PowerPoint presentations have a negative effect on students' performance in the accounting courses.

In summary, majority of existing studies have found positive students' attitude towards PowerPoint versus traditional methodology, with no significant change in performance. In contrast to this overall trend, the few studies that have associated performance improvements with PowerPoint, suffer from some shortcomings like, the small sample, students having access to copies of lecture notes, different examinations questions administered to students, or different materials covered. The objective of this research is to find out the differences, if any, in the accounting students' attitude and performance in the two different groups of classes: classes with PowerPoint presentations and classes without, while taking into consideration, and trying to avoid, the limitations detected in previous research. Thus, researchers here insisted on studying a single course with many sections, with same materials covered in each section, and where few sections are employing PowerPoint and others the traditional methodology; given that their objective also was to cover a large sample.

Research Methodology

This conceptual framework is used to guide the quantitative research conducted to identify the students' attitude towards the two different teaching methodologies, the Principles of Financial Accounting II (ACO202) teachers at XYZ University, are employing. These teaching methodologies are PowerPoint (PPT) and traditional. The research questions, therefore, were to find out:

1. The impact of the two teaching methodologies on materials understandability.
2. The effectiveness of the two teaching methodologies on the teaching/learning process.
3. Students' attitudes towards the two different teaching methodologies employed.
4. Students' preferences for the two different teaching methodologies.
5. The impact of the two teaching methodologies on students' performance, as measured by the grade.

The researcher adopted a cross-sectional study design, under which, she got answers to the research questions she had set and tested them under two different groups. The first group of students is those taking the ACO202 course with professors employing the PowerPoint technique in educating students, and the second group is one where professors are still adopting the traditional way of teaching using a white board and a marker. Thus, purposive sampling is the sampling method used in this research.

Moreover, this study is classified as a media comparison study because it compares the effects of two instructional delivery media (PowerPoint and conventional instruction) on students' learning and attitude. Such studies' objective is to determine if one medium has a greater effect on learning than another (Thompson et al., 1992). To note here that the ACO 202 instructors at XYZ University are given the full freedom to adopt the teaching methodology they are more comfortable with. Thus, it is unlikely that the instructor is deliberately disadvantaging one teaching methodology over the other. During the Fall semester, academic year 2010-2011, a self-completion questionnaire, inspired by those employed by Butler and Mautz (1996) and Nouri and Shahid (2005) with several modifications (see Appendix A), was distributed to 428 students. Students were asked to best describe their attitude towards the teaching methodology, their accounting lecturer is adopting, using a five-point Likert scale; going from strongly disagree (SD) (represented by 1), to disagree (D=2), to neutral (N=3), to agree (A=4), to strongly agree (SA=5).

The Statistical Package for Social Sciences (SPSS), Version 19, was used to code and analyze the data collected from questionnaires (Check Appendix B for coding). Descriptive statistics were used first; frequencies were then calculated. Cross-tabulations were also used on some variables to examine how scores on these variables are related. Subsequently, the factor analysis was employed and means were calculated. Moreover, the t-test aided the researchers to compare the mean scores of the two different sets of data in order to find out if the variance in the students' attitude is significant among the two different teaching styles. Finally, an ordinary least square regression with students' grade as the dependent variable was run in order to find whether teaching methodologies have an impact on students' performance.

The researcher in this study assumed that the attitude scales are treated as interval scales where the numbers 1, 2, 3, 4 and 5, representing "strongly disagree", "disagree", "neutral", "agree" and "strongly agree", respectively; signify the magnitude of the differences, [(Nishisato (2004) conducted a similar reckoning in discussing Dual Scaling, but assigned -2, -1, 0, 1, 2 to the five ordered categories and then computed the mean)]. Consequently, this researcher was able to use powerful statistics in data processing such as factor analysis, means, standard deviations and t-test (Cohen et al., 2000). "Powerful" in this sense refers to the ability of those parametric tests to find out an effect that genuinely exists and not to miss a significant effect in the data (Field, 2000).

Presentation of findings

Descriptive Statistics

Table 1 presents the students' demographic characteristics. The sample is almost half distributed among males and females. Male represents 57.7% of the sample, while female constitutes 42.3% of the respondents.

Table 1: Demographic Data

	Frequency	Percent
Male	247	57.7%
Female	181	42.3%
Total	428	100.0%

Table 2 shows that 51.9% of the students surveyed in this research took ACO202 with PowerPoint, and the remaining percentage (i.e. 48%) attended traditional classes of AC202. Due to group equivalence and the big sample size (428 students), results obtained in this study might be generalizable and consequently, researchers here will overcome the limitations found in previous studies which used small sample sizes (Susskind, 2005).

Table 2: Principles of Accounting II Methodology

	Frequency	Percent
PowerPoint	222	51.9%
Traditional	206	48.3%
Total	428	100.0%

Reliability Analysis

Cronbach's alpha, one of the standard ways of measuring the reliability of a test, was used in this research to assess the internal consistency of the questionnaire administered to the students; especially given that this questionnaire used the Likert scale. Alpha was found to be 0.89 (given that alpha can range from 0 to 1). It is high, thus, reflecting a high level of internal consistency of the questionnaire used in this study.

Factor Analysis, Means and t-test

Factor analysis was conducted on the different statements describing the teaching methodology adopted by the ACOII professors. Table 3 shows the different statements describing the two different teaching methodologies (PPT and Traditional) and their loadings on the two factors extracted. The following statements loaded high on factor one, 'this teaching methodology (TM) is more efficient with explaining theories; TM makes materials presented in a way I understand better; TM makes materials concise; easy to follow; clear; more organized; better understood; quickly understood and needs less efforts at home'. Factor one, thus, describes the "materials understandability".

Whereas, the following statements loaded high on factor two: 'TM makes note taking easier; TM encourages class participation; TM challenges me to think; TM leads to more concentration; TM stimulates critical thinking; TM is more efficient in problem solving; TM allows greater interaction; TM helps me to learn'. This factor describes the "Effectiveness of the teaching/learning process". The third factor describing the students' positive attitude towards the teaching methodology employed is labeled "entertainment" and has the following statements under its umbrella: 'TM is entertaining; TM makes materials enjoyable; TM makes materials more interesting'. The fourth factor describes the students' negative attitude towards the teaching methodology adopted and is labeled "dullness". The following statements loaded high on it: 'TM is tiresome; TM is boring'.

Table3: Rotated Component Matrix: the statements and their loading on the four factors extracted

	Component			
	1	2	3	4
TM makes note taking easier	.355	.660	.039	-.045
TM encourages class participation	.208	.699	.205	-.024
TM challenges me to think	.260	.690	.206	.021
TM leads to more concentration	.308	.640	.215	-.096
TM is entertaining	.119	.159	.712	-.322
TM is tiresome	-.183	.178	.000	.784
TM stimulates critical thinking	-.015	.653	.226	-.065
TM is boring	-.046	-.398	-.135	.698
TM is more efficient in problem solving	.261	.716	-.121	.030
TM is more efficient with explaining theories	.487	.454	.088	.086
TM allows greater interaction	.382	.660	.143	-.021
TM helps me to learn	.380	.619	.184	-.170
TM makes materials presented in a way I understand better	.737	.378	.053	-.155
TM makes materials enjoyable	.438	.209	.655	-.226
TM makes materials concise	.514	.281	.477	.057
TM makes materials easy to follow	.742	.179	.257	-.151
TM makes materials clear	.803	.238	.185	-.074
TM makes materials more organized	.751	.124	.259	-.037
TM makes materials more interesting	.168	.121	.658	.174
TM makes materials better understood	.701	.473	.170	-.049
TM makes materials quickly understood and needs less efforts at home	.678	.338	.063	-.136

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 7 iterations.

There are as many components as there are variables but most are inconsequential. The consequence of a particular vector is determined by the magnitude of the associated eigenvalue. By default, SPSS uses Kaiser's criterion of retaining factors with eigenvalues greater than 1 (Field, 2000). Four factors were, thus, retained under the Principal's leadership style, explaining a total of 61.538 % of the variance (Table 4). By rotation, the factor structure was optimised and the relative importance of the factors extracted is equalised (Field, 2000).

Table 4: Total Variance explained for the factors extracted under Principals' leadership

Component	Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total eigenvalues	% of variance	Cumulative %	Total	% of variance	Cumulative %
1	8.843	42.108	42.108	4.716	22.456	22.456
2	1.703	8.109	50.216	4.711	22.432	44.889
3	1.262	6.011	56.227	2.076	9.888	54.777
4	1.115	5.310	61.538	1.420	6.761	61.538

Means have been calculated for the different statements, making up each factor of the four factors extracted describing the effectiveness of the ACO202 teaching methodology and the students' attitude towards it. Then, means of the means have been found for the two different sets of data under the 'PPT' and 'Traditional'. And, in order to check if the teaching methodology in that way has any significant impact on the way the students understand materials, evaluate effectiveness of the teaching/learning process, and show any positive or negative attitude towards it; the Independent T-test was used.

Table 5 shows that two factors out of the four extracted, factor one (Materials understandability) and factor two (Effectiveness of the teaching/learning process), show a significant variance under the two different teaching methodologies, with a coefficient of 0.001 and 0.000 respectively, (significant at $p < 0.05$).

Table 5: Means, standard deviation and sig. for the different statements describing the students' evaluation for the two different teaching methodologies: PPT and Traditional.

Statements:		PPT: set # 1 (n=222)		Traditional: set # 2 (n=206)		Sig.	t
		Mean	Stand. Dev.	mean	Stand. Dev.		
		Factor One	TM is more efficient with explaining theories	3.8409	0.97791		
	TM makes materials presented in a way I understand better	3.8991	0.93024	4.1902	0.80312	0.001	-3.452
	TM makes materials concise	3.5185	0.76531	3.802	0.83481	0.000	-3.611
	TM makes materials easy to follow	3.8371	0.92475	3.9756	0.88804	0.116	-1.577
	TM makes materials clear	3.991	0.8412	4.1618	0.87003	0.040	-2.057
	TM makes materials more organized	4.1261	0.8141	3.9171	0.97917	0.017	2.388
	TM makes materials better understood	3.7928	0.94765	4.1854	0.90466	0.000	-4.379
	TM makes materials quickly understood and needs less efforts at home	3.6	1.08287	3.8725	1.0887	0.010	-2.582
	Material Understandability	3.8323	0.6937	4.0815	0.84362	0.001	-3.26
Factor Two	TM makes note taking easier	3.8243	1.10562	4.3383	0.85731	0.000	-5.37
	TM encourages class participation	3.8063	0.98098	4.301	0.75656	0.000	-5.865
	TM challenges me to think	3.6802	0.96146	4.1748	0.8196	0.000	-5.74
	TM leads to more concentration	3.7818	1.01028	4.2255	0.93014	0.000	-4.708
	TM stimulates critical thinking	3.4654	0.89233	3.8109	0.90779	0.000	-3.92
	TM is more efficient in problem solving	3.6045	1.16375	4.399	0.82857	0.000	-8.135
	TM allows greater interaction	3.7072	0.93201	4.2913	0.81607	0.000	-6.909
	TM helps me to learn	3.9502	0.90064	4.068	0.92406	0.184	-1.332
	Effectiveness of the Teaching/Learning process	3.7325	0.71483	4.2038	0.62625	0.000	-7.11
Factor Three	TM is entertaining	3.6083	0.94208	3.4089	0.99768	0.036	2.103
	TM makes materials enjoyable	3.6351	0.86523	3.6049	0.90477	0.725	0.353
	TM makes materials more interesting	3.9502	2.1747	3.8824	0.93423	0.672	0.424
	Entertainment	3.725	1.01414	3.6385	0.78866	0.329	0.978
Factor Four	TM is tiresome	2.8194	0.9449	3.1139	0.99846	0.002	-3.092
	TM is boring	2.4018	1.08077	2.2878	1.13332	0.290	1.059
	Dullness	2.6145	0.8149	2.704	0.84893	0.274	-1.09

Whereas, the third factor (Entertainment) and the fourth one (Dullness) do not show any significant variance, with a coefficient of 0.329 and 0.274 respectively, (significant at $p < 0.05$).

One statement under factor one (TM makes materials easy to follow) and one statement under factor two (TM helps me to learn) did not show a significant variance for the 'PPT' and 'Traditional'. However, one statement under factor four (TM is tiresome) showed a significant variance with a coefficient of 0.002, (significant at $p < 0.05$).

The same attitude scale is used, enabling students to show their attitude towards the following statement: 'This teaching methodology enables instructor to put less effort in class'. Table 6 shows that students believe that ACO202 teachers using PPT put less effort in class, in comparison to their colleagues using the traditional methodology. The variance is significant with a coefficient of 0.000, (significant at $p < 0.05$).

Table 6: Students’ attitude towards the amount of efforts instructors put in class.

	PPT: set # 1(n=222)		Traditional: set # 2 (n=206)		Sig.	T
	Mean	Stand. Dev.	mean	Stand. Dev.		
This teaching methodology enables instructor to put less effort in class	3.3653	1.09372	2.3805	1.18471	0.000	8.877

Students’ preferences

Students have been also asked about their preference for the teaching methodology to be assumed in quantitative courses, qualitative ones and in ACO202. Tables 7, 8 and 9 summarize the results. It is revealed that 72.9% of the students prefer quantitative courses to be taught using the traditional way and more specifically, 70.7% of the students prefer ACO202 to be taught using the traditional methodology. However, Table 8 shows that 80.1% of the students prefer PPT for the qualitative courses.

Table 7: Preference of quantitative courses teaching methodology

	Percent
PowerPoint	27.1%
traditional	72.9%
Total	100.0%

Table 8: Preference of qualitative courses teaching methodology

	Percent
PowerPoint	80.1%
traditional	19.9%
Total	100.0%

Table 9: Preference of the ACO202 teaching methodology

	Percent
PowerPoint	29.3%
traditional	70.7%
Total	100.0%

Table 10: Cross-tabulation between the ‘ACO202 teaching methodology’ and ‘its effectiveness’

		effectiveness of the ACO202 teaching methodology					Total
		excellent	very good	satisfactory	less than satisfactory	poor	
PowerPoint	% within ACO202 methodology	17.4%	49.1%	27.5%	4.1%	1.8%	100.0%
	% within effectiveness of the ACO202 teaching methodology	32.2%	57.8%	60.0%	69.2%	66.7%	51.7%
Traditional	% within ACO202 methodology	39.2%	38.2%	19.6%	2.0%	1.0%	100.0%
	% within effectiveness of the ACO202 teaching methodology	67.8%	42.2%	40.0%	30.8%	33.3%	48.3%
Total	% within ACO202 methodology	28.0%	43.8%	23.7%	3.1%	1.4%	100.0%
	% within effectiveness of the ACO202 teaching methodology	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Moreover, Table 10 shows the percentages found out after cross tabulating the ‘ACO202 teaching methodology’ with ‘its effectiveness’.

It is found that among those who rated the effectiveness of the teaching methodology as ‘excellent’, 32.2% only have taken ACO202 with PPT and 67.8%, more than double, have taken ACO202 with a professor adopting the traditional way of teaching. This relationship becomes exactly the inverse for the two lowest rating: ‘less than satisfactory’ and ‘poor’.

The impact of the independent variables on students’ performance:

To test whether PowerPoint presentations affect students’ grade, an ordinary least squares regression is used with the students’ final grade as the dependent variable. The student’s final grade represents the total points a student receives throughout the semester. This grade is based on two exams accounting for a 50% of the final grade, a final exam accounting for a 40% of final grade, and a 10% for attendance and participation. Individual characteristics are also included in the analysis to account for variables that might affect student performance. The explanatory independent variables included are the course teaching methodology (PowerPoint versus traditional), gender, students’ grade in Principles of Financial Accounting I (ACO 201), and student’s GPA.

The regression model used in this study is as follows:

$$ACO202 = \beta_0 + \beta_1 PPT + \beta_2 GEN + \beta_3 ACO201 + \beta_4 GPA + \beta_5 PROF + \epsilon_i$$

- ACO202=Student’s final grade in Principles of Financial Accounting II.
- PPT= A binary dummy variable =1 for the courses taught with PowerPoint, 0 for the courses taught with the traditional chalk and talk.
- GEN=Gender of students; a binary dummy variable =1 for females and 0 for males
- ACO201= student’s grade in Principles of Financial Accounting I. This is used as a proxy for the students’ ability in the Principles of financial accounting II. The researchers found it necessary to include it in the model because the ACO201 course is a prerequisite for the ACO 202 one.
- GPA= Student’s Overall GPA (check Appendix B)
- PROF= Professor’s dummy variables are included to capture the professor’s personal impact on students’ grades.

The coefficient of PPT is expected to be positive if PowerPoint presentations positively affect students’ performance and negative if they adversely affect students’ performance. However, the effect of gender is unpredictable. Some studies show that male students generally perform better on multiple choice questions, while female students do better on essay questions (Siegfried, 1979). Kask (2000) found that PPT enhances female students’ academic performance, with no significant effect for male students. Moreover, while it is expected that ACO201 and GPA would have positive effect; it is unknown how PROF affects student’s performance. Table 11 shows that the teaching methodology, the student’s GPA, as well as his/her grade in the ACO201course correlate with the students’ achievement.

Table 11: Ordinary Least Squares Regression Results: Impact of the Teaching Methodology on Students’ performance.

Coefficients a						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
			Std. Error	Beta		
1	(Constant)	1.091134	0.236854		4.606779	5.59E-06
	Gender	0.066147	0.081907	0.033571	0.807586	0.419834
	Teaching Methodology	-0.17702	0.082132	-0.09079	-2.15526	0.031769
	ACO202 instructor	-0.0107	0.012485	-0.03445	-0.85711	0.391925
	ACO201 grade	0.412793	0.06746	0.30728	6.119043	2.34E-09
	GPA	0.340417	0.050076	0.358225	6.797948	4.12E-11
	Adjusted R-Square	0.379427				
	F-Statistics	48.07879				

a. Dependent Variable: ACO202grade

It is found that among those significant variables, the teaching methodology PPT displays a negative coefficient (-0.17702), indicating that PPT is negatively affecting students' performance. The remaining factors which are found not to have an impact on students' grades are the gender and the ACO202 instructor. This Table shows that the adjusted R-square is 0.379 indicating that the regression is explaining 37.9% of the variance in students' performance.

Analysis of findings

Materials Understandability

Students' responses to the questionnaire reflected a greater materials understandability (Factor 1) for the lectures explained using the traditional methodology versus the PowerPoint one. This finding contradicts the results found by Nouri and Shahid (2005) who examined the effects of PowerPoint on student learning and attitudes in the managerial accounting course in the United States. The Lebanese students in this research claimed that when PowerPoint is used, the lectures are more organized, supporting previous findings in the United States (Anderson, 1996; Pippert and Moore, 1999; Sammons, 1995; Susskind, 2005; and Wilmoth and Wybrancic, 1998), in Russia (Frey and Birnbaum, 2002), and in U.K (Szabo and Hasting, 2000). The difference in the means is significant with a coefficient of 0.017 (significant at $p < 0.05$). Despite better organization for lectures conducted with PowerPoint, results show that students find traditional lectures easier to understand than PowerPoint ones, in contrast with studies conducted in the United States (Atkins-Sayre et al., 1998; Bartsch and Cobern., 2003; Bushong, 1998; Butler and Mautz, 1996; Mantei, 2000; McConnel, 1996; Nowaczyk et al., 1998; Pippert and Moore, 1999; Sammons, 1995; and Susskind, 2005), and in UK (Szabo and Hasting, 2000). Wilmoth and Wybrancic (1998) found that students' comprehension in USA improves in the courses taught with PowerPoint, and Harknett and Cobane (1999) found that 80% of students found PowerPoint slides beneficial; however, students in this study claimed that traditional lectures make materials clearer, better and quickly understood.

The differences are significant with coefficients of 0.040, 0.000 and 0.010 respectively (significant at $p < 0.05$). This finding is similar to what is revealed at Radford University where the majority of economic students felt that they could understand the lectures better and find the logic easier in the sections taught without PowerPoint (Hashmezadeh and Wilson, 2007). Because students spend less time taking notes with PowerPoint, the instructor can cover more materials in a single session, which might negatively affect the degree to which materials are understood. On the other hand, because writing on whiteboards takes time and provides more natural pauses and delays in the presentation, students may have more time to reflect on the materials before discussion moves on to new topics. Furthermore, the material is reinforced through the additional note taking that deems necessary. Deciding on which note to note and which information is not of a great relevance, students' active learning is at its best performance inside classrooms, which in turn relieve students from putting hard effort at home. Students in this sample revealed that more efforts are needed at home when lectures are taught using PowerPoint as opposed to traditional. This difference between the two means is significant with a coefficient of 0.010 (significant at $p < 0.05$). This may reflect one of the limitations of PowerPoint. Although PowerPoint structures the content of lectures, it does not structure the way students interact with the material outside the classroom (Creed, 1997). Furthermore, since materials are less clear and understood to a lesser degree with PowerPoint lectures, it is expected that students need to spend more time at home to be able to better understand the materials.

Furthermore, students perceived the professor using PowerPoint as putting less effort in the class, a difference statistically significant at 95% confidence level (Table 6). Instructors might not be seen as working too hard in the class, therefore, it is not surprising that the student's motivation might decline, and their enthusiasm toward the class might weaken. Students' perception of instructors putting less effort in the class might have a negative impact on students, which in turn lead them to put less effort in the class. They might also be less inclined to listen attentively to the lectures, knowing deep down that the lectures' materials will be available for them, and beforehand in most of the cases. Therefore, students will need to spend more efforts at home to study the materials and understand it properly.

Learning Effect

The second factor extracted and entitled 'Effectiveness of the teaching/learning process' summarizes all the steps that an effective learning process passes through; from 'more concentration' to 'stimulates critical thinking' and 'challenges me to think', to 'encourages class participation' and 'allows greater interaction' to finally 'makes note taking easier'; not to forget an issue of a great importance to "Accounting" which is 'efficient in problem solving'.

Students find that all these steps are more effective with traditional lectures versus PowerPoint ones with means of 4.2038 versus 3.7325. The difference is significant with a coefficient of 0.000 (significant at $p < 0.05$). To note also that this finding is true for all the statements making up this factor except for 'helps me to learn' (Table 5). The learning and understandability effect mentioned above is consistent with the active versus passive learning. Hermanson (1994) describes active learning to situations where students are involved in the education rather than passively listening to lectures. With traditional lectures, students need to write down the lectures which make them more involved and more active through repetition. The process behind active learning positively affects understanding. On the other hand, with PowerPoint, students can sit and watch the presentation passively without finding a need to be involved in class. As this pattern continues, student may become passive learners and they may view the class as monotonic. Literature in western societies shows that active learning affects student satisfaction, attitude, and learning (Dickinson & O'Connell, 1990; Maher, 1981; Nerenz and Knop, 1982; and Popenhagen et al., 1982).

Similar to previous studies conducted in the United States which reported that technology distanced professors (Pippert and Moore, 1999) and the use of PowerPoint makes the class depersonalized (Sammons, 1995), the results of this research also revealed the significant differences in the students' attitudes toward the lectures using traditional methodologies which encourage more class participation and allow greater interaction. Students' perception of the formal structure of the PowerPoint presentations and the materials' organization in the PowerPoint slides, may lead them to view these lectures as more preplanned and less spontaneous with less room for class participation and interaction. Consequently, they might be less willing to interrupt the professor.

This could explain the low rating that students revealed on classroom interaction with PowerPoint slides (Nowaczyk et al., 1998). Other explanation for this result is suggested by Hlynka and Mason (1998) who argued that interaction might have been reduced in the PowerPoint presentations due to the sequence of slides which makes it harder to jump from point to point, thus reducing the tangency introduced by the students as well as instructors. Parks (1999) mentioned that the PowerPoint presentation made it easier for students in U.S Universities to sleep, maybe due to the light that need to be dimmed (Ferreira, 2010). On the other hand, discussions tend to be more spontaneous with whiteboard, resulting in the appearance of more student engagement in the section of the class in which PowerPoint was not used. Thus, students felt more involved and enjoyed a greater level of interaction in the sections taught without PowerPoint. Pippert and Moore (1999) found that the use of PowerPoint might lower the quality of teacher-student interaction. This result might reinforce our previous findings that since students in the traditional section participate and interact more, they become active learners and thus evaluate this methodology as higher on attributes such as efficiency and understandability in comparison to students in the PowerPoint section who are experiencing passive learning.

This result might also help to explain why traditional lectures are more effective in increasing students' learning. It is often argued that teacher immediacy is an effective instructional strategy that enhances students' learning in the United States (Witt and Wheelless, 2001). PowerPoint lectures, through reducing the connections between teacher and students in, will also reduce learning outcomes (Pauw, 2002).

Students' Attitudes

Entertainment

Regarding the positive attitudes toward the teaching methodologies adopted, our findings are in conflicts with a number of studies which found that PowerPoint lectures are more interesting and entertaining than traditional ones in the United States (Susskind, 2005; Butler and Mautz, 1996; Mantei 2000; McConnel 1996; Nowaczyk et al. 1998; Pippert and Moore, 1999; Sammons 1995), in Russia (Frey and Birnbaum, 2002) and in UK (Szabo and Hasting; 2000; Perry and Perry, 1998). Although PowerPoint presentations received a greater rating for the third factor 'Entertainment' with its three statements, the difference is not statistically significant (Table 5). The perception of structure and organization in PowerPoint, and the absence of class participation and interaction of students in these classes might offset the entertainment and enjoyable aspects of the PowerPoint, thus leading to this non significant difference between PowerPoint and Traditional methodologies. Although this result is inconsistent with that of Butler and Mautz (1996) and Nowaczyk et al. (1998), who found that entertainment is a significant factor and PowerPoint lectures as more interesting; it supports Nouri and Shahid (2005), who found out no difference on the level of entertainment in the different Accounting sections.

This inconsistency between the studies could be due to the repeated use of the PowerPoint teaching technique in the majority of the courses. The significant finding for ‘entertaining’ in the work of Butler and Mautz (1996) may be due to Clark’s “novelty” effect of new media as suggested by Clark (1983), where students may enjoy a new medium simply because of its newness. Clark points out that the positive effect of the technology tends to diminish with time as students become more familiar with it. The researchers here find this analysis logical as the previous studies were in years 1996 and 1998, whereas the other one is in year 2005, and their study is in year 2011.

Dullness

The fourth factor extracted is ‘dullness’, PowerPoint lectures are perceived to be more boring than traditional ones. Students might think that the material which is not presented on a slide is not important. Thus, they might feel that there is no need to take additional notes next to each slide. Consequently, they might believe that there is no need to listen so attentively, which will in turn make the PPT classes more boring to them. However, the difference is not statistically significant (Table 5).

On the other hand, traditional lectures are found out to be more tiresome than PowerPoint lectures. The results might be attributed to the same above logic. Since traditional lectures require more class participation and more attention from students’ part, these lectures are more tiresome. They have to stay attentive with all their senses in order not to miss any single detail discussed by the professor. They have to do some kind of filtering while taking notes in order to judge which ideas are worth noting and which examples are to be highlighted making materials easier to understand at home. This selection process requires extra effort during the session. Thus, students in traditional classrooms are asked to undertake two tasks; first understanding the materials while following the instructors’ flow of ideas, and second keeping perfect records of what is being said because there will be no soft or hard copies for the materials placed on the web or distributed by assistants. This analysis made the researchers in this study understand the significant difference found between the two means with a coefficient of 0.002 (significant at $p < 0.05$).

Preference for the Teaching methodologies

Regarding students’ preference for the methodology used, findings indicate that 70.7% of the students surveyed, prefer traditional presentations to the PowerPoint ones for the accounting courses (Table 9). Since students understand and benefit more from traditional lectures, their preference for the traditional methodology is not surprising. A traditional accounting lecture is found to be more interactive and allows greater class participation than a PowerPoint one. In traditional classes, the accounting materials are found to be significantly more effective in stimulating students’ critical thinking, and increasing their level of concentration. The traditional methodology seems significantly suitable and efficient for problem solving sessions. All the factors listed above explain the students’ tendency to prefer accounting to be taught with traditional lectures.

Furthermore, since involvement focuses on the student’s active participation in the learning process and enhances satisfaction as suggested by Astin (1984), students prefer to take accounting courses with traditional methodologies which offer more room for involvement. This result suggests that students prefer the medium that enhances their learning.

Data in this study shows that 78.3% of the female respondents prefer traditional lectures versus 65.6% for the males. This slight variation in the women’s preference for traditional lectures over PowerPoint might be due to the fact that female like the lectures that require more attention, more effort, more interaction and thus, might produce more learning effect.

Results in this study contradict previous findings in the United States, United Kingdom, and Russia where students reported a greater preference for PowerPoint lectures to the chalkboard (Atkins-Sayre et al., 1998; Daniels, 1999; Sammons, 1995; Beets and Lobingier, 2001; Frey and Birnbaum, 2002; and Perry and Perry, 1998).

Furthermore, students in this study were asked to state their preference for the teaching methodology separately for quantitative courses and for qualitative ones. The results in Table 7 shows that while the majority of students (72.9%) prefer traditional methodologies for quantitative courses, only 19.9% of the same respondents recommend the same methodology for qualitative courses (Table 8).

This difference in the students' preference for the teaching methodology across the courses indicates the necessity to isolate the exact impact of PowerPoint slides on student across disciplines, offering a direction for future research.

Impact of Teaching Methodologies on Students' Performance

Certainly, the impact of PowerPoint lectures in the classroom on materials' understandability and students' attitude is an important issue. However, a more important question one needs to shed light on is whether or not this methodology actually improves learning outcomes. Answering this question is vital in order to justify or not the huge investment educational institutions are spending in technology. Although students in this study perceived themselves to have high self-efficacy in the traditional classroom and stated a high preference for traditional lectures, it is important to measure whether their performance is positively affected by this teaching methodology.

To conclude the study, the impact of PowerPoint on students' performance as measured by the students' grades in the class is examined. The regression was estimated with the inclusion of all explanatory variables, as shown in Table 11. The results show that PowerPoint has a significant negative impact on students' performance. The use of PowerPoint leads to lower students' grades in ACO202, so performance scores are higher in sections with the traditional methodology format. It should be noted that instructors were lecturing from the same book and attempting to provide identical notes. This is similar to Amare's (2006) findings that in U.S universities, students in the traditional section outperform those in the PowerPoint one.

Since the approach employed here is a two group design study where one group received the lecture materials with the aid of PowerPoint presentation, while the other group received the same materials with the traditional chalk and whiteboard, students' performance is contrasted across an entire course. Since students in all the sections received the same unique course material, the effect that the material content might have on students' performance is eliminated.

This finding is in conflict with a number of other studies conducted in USA and UK that show that accompanying lectures with PowerPoint presentations either improved students' performance (Kask, 2000, female students; Lowry, 1999; Mantei, 2000; Szabo & Hastings, 2000, Exp. 2 Jensen and Sandlin, 1992; and Wilmoth and Wybraniec, 1998) or does not impact students' (Daniels, 1999; and Rankin and Hoaas, 2001). Regardless of others' findings, the result of this study is not so surprising given the students' preference for and perceived high learning effect of the traditional teaching methodology. Using the teaching methodology that students prefer would yield better performance. If students like the lecture style, they will be more motivated to come to the class more often, listen more carefully, and learn more effectively; this will be translated into higher scores. Although PowerPoint lectures are perceived to be more entertaining, one should be aware of the connection between entertainment and performance.

Although it is not possible to generalize these findings, it is important to note that traditional lectures sections scored higher than PowerPoint sections. Overall, the results suggest that PowerPoint lectures are perceived by the students as less beneficial to learning and their actual grades are supporting this. Therefore, one might conclude that traditional lectures are more rewarding for accounting classes and PowerPoint presentations are not as effective as one would expect. Therefore, PowerPoint lectures are not found fruitful in the accounting classes despite the tendency of instructors to use technology in general and PowerPoint in particular in their classrooms.

The other explanatory variables' findings were as predicted. A high grade on ACO201 and a high GPA have a positive influence on students' ACO202 grades. However, gender was positive but insignificant, indicating that female students' grades were not different from those of the male students when controlling for the other variables in the equation. Furthermore, the variable PROF (professor) is not found to be significant in explaining students' performance.

The most interesting result of this study is the convergence between the student's subjective (perception, attitude and preference) and objective (grade) performance as opposite to previous studies that reported a difference between the objective and subjective performance. Many previous studies found that although PowerPoint lectures are perceived as easier to understand (Susskind, 2005) (in U.S) and useful for learning (Szabo and Hastings, 2000) (in U.K) (in their first experiment), they did not enhance the students' performance on exams (Susskind, 2005 and Szabo and Hastings, 2000). The previous findings raised the question of why PowerPoint enhances students' self-efficacy and beliefs but not their performance.

However, in this study, students claimed that traditional lectures were significantly more efficient in explaining the concepts, in making the materials easier to understand and in helping them to learn, therefore, it is not surprising that PowerPoint lectures negatively affect their performance as measured by grades.

Conclusion and Limitations

PowerPoint may indeed be the best presentation tool for sales and other marketing presentations. Technological innovations have made it easier and less time for instructors to incorporate PowerPoint in their classes. However, evidence of whether or not it is the best medium for academic lectures is still anecdotal.

This study examines the impact of PowerPoint presentation on students' attitudes and performance in accounting courses in Lebanon. The findings of the study show the following results. First, there were no significant differences between the sections with PowerPoint and the sections with the traditional methodology on such attributes as dullness and entertainment. Second, students who are taking the accounting course with the traditional white board and markers, indicated that this methodology is more effective in the learning process and materials' understandability than PowerPoint. Third, traditional lectures offer more room for interaction and improve instructor-student relationship. Fourth, students need to spend more efforts at home to understand the materials explained with PowerPoint. Fifth, students preferred to take accounting courses with traditional methodology rather than PowerPoint, suggesting that they prefer the mean that enhances their learning. Sixth, although students prefer quantitative courses to be taught with traditional method, they prefer qualitative courses to be taught using PowerPoint. Seventh, PowerPoint presentations appear to negatively affect student's performance in exams, as measured by grades.

Overall, the result of this study is discouraging, given the high level of investment in and the spread of the communication technology. However, technology is not a magic bullet. As we advance in technology, we need to take into account what is, and has always been the critical factor in an ideal classroom: knowledgeable and enthusiastic instructors who can adapt to different students' learning styles.

The findings of this study contribute to our understanding of the impact of PowerPoint in quantitative courses. This is an important issue that one needs to shed light on, because colleges and universities, especially in Lebanon, are trying to adopt PowerPoint methodology in all courses. This study represents a pioneer step in assessing the impact of PowerPoint on students' attitude and performance in Lebanon. However, it is subject to a number of limitations.

First and due to the fact that this study is not testing the effectiveness of PowerPoint and traditional methodologies used by a single professor, our results can be attributed to the professor's effectiveness as well as his/her effectiveness in delivering information using a particular methodology.

Second, the findings might have been affected by the way PowerPoint slides are constructed and organized. Researchers in this study did not check these PowerPoint slides to judge their efficiency. To note here that poorly designed PPT slides might negatively affect students' learning and satisfaction. Future research should examine whether students' learning and attitudes are affected by the quality of PowerPoint slides (poorly-designed vs. well-designed).

Third, the research's objective is to find out the impact of the different teaching methodologies on the ACO202 course and therefore the findings do not necessarily imply that PPT would not be beneficial for other types of courses especially the qualitative ones. Further research is needed to examine whether this study's results are specific to the 'Accounting' course only, or it can be generalized to other courses as well. In addition, Further studies comparing the effectiveness of PowerPoint in quantitative versus qualitative courses are needed to draw implications.

Finally, it is worth noting here that even though XYZ University adopts the American system in its education, there might be other factors specific to the Lebanese culture that were at play and might affected the results of this study. For a deeper understanding of whether the teaching methodology's effectiveness is affected by cultural variables and whether the results are applicable to other jurisdictions, further studies are to be conducted within the same, as well as in, different cultural context.

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Appendix A
The questionnaire

The objective of this study is to find out the effectiveness and the efficiency of the different teaching methodologies adopted by teachers. Thus, kindly note that you are not evaluating the instructor, but the methodology used in delivering the materials. You are kindly asked to be as objective as possible.

I- Please answer the following questions and circle the appropriate answer:

- 1- Name: _____
- 2-ID: _____
- 3-Gender: 1. Male
 2. Female
- 4- Teaching methodology used by the ACO 202's instructor:
 1. PowerPoint
 2. Traditional: white board and markers
- 5-Name of your ACO 202 Instructor: _____
- 6- Your grade in ACO 201: _____
- 7- Your Grade in ACO 202: _____
- 8- Your GPA: _____

II- Please circle the number that most accurately describes your attitude towards the following statement. Use the following scale as a reference for your response. Kindly remember that you are evaluating the teaching methodology used in ACO 202.

- 1 = Strongly Disagree (SD) 4 = Agree (A)
- 2 = Disagree (D) 5 = Strongly Agree (SA)
- 3 = Neutral (N)

	S				S
	D	D	N	A	A
This teaching methodology					
1- makes note-taking easier	1	2	3	4	5
2- encourages class participation	1	2	3	4	5
3- challenges me to think	1	2	3	4	5
4- leads to more concentration	1	2	3	4	5
5- is entertaining	1	2	3	4	5
6- is tiresome	1	2	3	4	5
7- stimulates critical thinking	1	2	3	4	5
8- is boring	1	2	3	4	5
9- is more efficient with solving numerical problems	1	2	3	4	5
10- is more efficient with explaining principles and theories	1	2	3	4	5
11- allows greater interaction between students and their teacher	1	2	3	4	5
12- helps me to learn	1	2	3	4	5
13- enables the instructor to put less efforts in the classroom					

This teaching methodology makes the materials:

14- presented in a manner that helps me understand the subject matter	1	2	3	4	5
15- enjoyable	1	2	3	4	5
16- concise	1	2	3	4	5
17- easy to follow	1	2	3	4	5
18- clear	1	2	3	4	5
19- more organized	1	2	3	4	5
20- more interesting	1	2	3	4	5
21- better understood	1	2	3	4	5
22- quickly understood, which needs less efforts at home	1	2	3	4	5

23-Overall, the effectiveness of the teaching methodology in ACO 202 is:

1. Excellent
2. Very Good
3. Satisfactory
4. Less than Satisfactory
5. Poor

24-You prefer to take qualitative courses such as Management, Marketing, with:

- 1.PowerPoint
- 2.Traditional : white board and markers

25-You prefer to take quantitative courses such as Accounting, Finance, with:

- 1.PowerPoint
- 2.Traditional: white board and markers

26-You would prefer ACO 202 to be taught with:

- 1.PowerPoint
- 2.Traditional: white board and markers

Appendix B Questionnaire Coding

ACO202 Methodology: 1for PPT, 0 for traditional

Gender: 1for Female, 0 for male

ACO201 grade: 1 if the final grade is less than 60
 2 if the final grade is between 60 and 65
 3 if the final grade is between 66 and76
 4 if the final grade is between 77 and 88
 5 if the final grade is between 89 and 100

ACO202 grade: 1 if the final grade is less than 60
 2 if the final grade is between 60 and 65
 3 if the final grade is between 66 and76
 4 if the final grade is between 77 and 88
 5 if the final grade is between 89 and 100

- GPA:
- 1 if the cumulative GPA is less than 2
 - 2 if the cumulative GPA is between 2 and 2.5
 - 3 if the cumulative GPA is between 2.5 and 3
 - 4 if the cumulative GPA is between 3 and 3.5
 - 5 if the cumulative GPA is more than 3.5

Statements in section II, from 1 to 22 are coded as:

- 1= strongly disagree
- 2= agree
- 3= neutral
- 4= disagree
- 5= strongly disagree

Statement 23 is coded as:

- 1= excellent
- 2= very good
- 3= satisfactory
- 4=less than satisfactory
- 5= poor

Statements 24 to 26 are coded as:

- 1= Powerpoint
- 2= traditional

The students' cumulative GPA at XYZ University is calculated as follows:

Grade	Quality Point Value	Percentage Equivalent
<i>A</i> ⁺	4.0	97-100
<i>A</i>	4.0	93 – 96
<i>A</i> ⁻	3.7	89 – 92
<i>B</i> ⁺	3.3	85 – 88
<i>B</i>	3.0	80 – 84
<i>B</i> ⁻	2.7	77 – 79
<i>C</i> ⁺	2.3	73 – 76
<i>C</i>	2.0	70 – 72
<i>C</i> ⁻	1.7	66 – 69
<i>D</i> ⁺	1.3	63 – 65
<i>D</i>	1.0	60 – 62
<i>F</i>	0.0	0 – 59