University of Alberta

PowerPoint use in undergraduate teacher education classes: Perspectives of elementary and secondary pre-service teachers

by

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Dedication

To my sons, Mischel and Yuri.

Abstract

This study investigated the pedagogical uses of PowerPoint in education classes among a group of university undergraduate elementary and secondary students. The study examined the perspectives of pre-service teachers' personal views of PowerPoint and their perceived academic performance in education classes as the result of PowerPoint. The purpose of the study was to determine how the use of PowerPoint in the classroom is affecting learning among a group of undergraduate elementary and secondary students in university classes. The study utilized a survey research design that employed quantitative methods to obtain data for the study, in which questionnaires were distributed to thirty five students and twenty nine students responded. Results revealed that eighty six percent (86%) of the students agreed that they enjoyed classes taught using PowerPoint presentations as part of lectures. Findings also showed that most of the students agreed that PowerPoint presentations should continue as part of their lectures.

Keywords: PowerPoint, undergraduate, pre-service teachers, elementary, secondary

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Table of Contents

List of Tables

List of Figures

Chapter 1

Introduction

Background to the study

In many university classrooms today, educators are finding interesting and creative ways to help students to interact with various learning material. The use of electronic learning environments to deliver different kinds of instruction has integrated many formats. One such approach that has gained much popularity is the inclusion of multimedia in the classroom. Very often such multimedia includes PowerPoint presentations that are created by individual instructors for their particular classes. Apperson, Laws, and Scepansky (2008), support this idea by informing that educational institutions have welcomed the use of PowerPoint in the teaching learning process. Also Yee & Hargis (2010), concur that many electronic presentation software applications are introduced into the curricula, with Microsoft PowerPoint being one of the most widely used.

Apperson et al. (cited in Yilmazel-Sahin, 2009) suggest that in higher education many professors often use PowerPoint to support their lectures because "it allows them to integrate multimedia components such as graphics, sound, video, charts and animations easily into their presentations," (Susskind, 2005 cited in Yilmazel-Sahin, 2009, p. 362). According to Mayer & Moreno (2003), "such representation of information using both auditory and visual inputs improves learning," (cited in Yilmazel-Sahin, 2009, p. 362). In doing so both teachers and learners expect to construct and convey knowledge that is directly related to the

topic or activity as seen in the PowerPoint presentations, and where the accent is on the learner rather than the teacher. From a constructivist point of view, it is the learner who interacts with his or her environment and thus gains an understanding of its features and characteristics. However, cognitive theory of multimedia learning, according to Mayer (1997), accounts for meaningful learning taking place in the learner through the visual and verbal information processing systems, where the auditory narration enters the verbal system and animation enters the visual system. Thus, in multimedia learning the learner is engaged in the cognitive processes of selecting, organizing and integrating information. Educators can adopt multimedia in the classroom to make the delivery of their subject matter effective and interesting to the learners.

For many students, as learners, they enjoy using new technology like PowerPoint as part of their learning new courses, especially if they have been exposed mostly to the traditional method of teaching and learning prior to entering the university. In fact researchers (e.g Apperson, Laws, & Scepansky, 2006; Atkins-Sayre, Hopkins, Mohundro, & Sayre, 1998; Beets & Lobingier, 2001; Mantei, 2000; Rankin & Hoaas, 2001; Szabo & Hastings, 2000) have repeatedly shown that learners are of the belief "that the use of PowerPoint facilitate their learning" (cited in Apperson, Laws, and Scepansky, 2008 p.1) For other students, understanding PowerPoint would be an important skill for their career and such knowledge can be beneficial to their university learning experience as a medium for their own personal development. Further, as the students work together on the various learning tasks associated with the

multimedia, they will be able to assist each other every step of the process. The fact that there will be ongoing individual or group work on the computer means that all students would be actively involved in the learning activity.

Such an approach is indeed placed within the field of inquiry whereby the theoretical assumption is drawn from constructivism which offers an explanation of the nature of knowledge and how individuals learn. This emphasis therefore suggests that there is the need for those who are responsible for classroom learning, to incorporate collaboration, active involvement and reflection, into their planning for learners.

Since the university student population consists largely of individuals who are accessing higher education having come from a variety of learning environments in their earlier education, one has to consider their needs as student learners. It is therefore important that the learning experiences that are provided for them take into consideration that in the current century, the ways in which students learn is linked to technological advances that include distance education, computer assisted instruction, and open learning systems. So, as part of the larger realm of computer assisted instruction, the researcher was interested in ascertaining the extent of use, and specifically how undergraduate students are really benefiting from the use of the technology in their learning. Additionally, given its pervasiveness, students' use of PowerPoint has gained popularity among teachers and students at all levels of the education system. Thus, it is with this in mind, that the researcher assessed the use and popularity of PowerPoint in lectures

to enhance classroom learning among a group of University of Alberta undergraduate education students in the Elementary and Secondary Route.

The purpose of the study

The purpose of this study was to determine how the use of PowerPoint in the classroom is affecting learning among a group of undergraduate elementary and secondary students. More specifically, it is hoped that the students are able to honestly state any challenges they have had with the PowerPoint as part of their teaching-learning process.

Statement of the problem

Undergraduate elementary and secondary students are now being exposed to PowerPoint presentations as part of the teaching learning process. PowerPoint has become an integral part of the method for delivering course content. The question of the affect that PowerPoint has on learning is now a cause for concern since many students react both positively and negatively to its usage in the classroom by professors in the teaching-learning process.

Research questions

The researcher sought to answer the following questions:

1. How do the undergraduate elementary and secondary students perceive the use of PowerPoint presentations in their education classes at the University of Alberta?
2. Do these students believe that their learning has been enhanced by the use of PowerPoint presentations?

3. What specific challenges to classroom learning do the undergraduate elementary and secondary students face in the use of PowerPoint as part of the teaching-learning process?

Significance of the Study

With the paucity of research reported and conducted on perspectives of pre-service teachers' pedagogical views of PowerPoint and their perceived academic performance in education classes as the result of PowerPoint, it is hoped that a study of this nature will add to the body of knowledge that already exists in the literature about perceptions and attitudes about the use of PowerPoint in technology and education.

Educational professionals may use the findings from this study to provide a platform for dialogue with non-professionals and other individuals to examine the impact of the use of PowerPoint in various fields of learning and teaching.

The findings from this research will also benefit teachers of instructional technology as they will have further insight as to how students regard instruction and learning when PowerPoint is used to deliver content and method in the subject matter.

Definition of terms

For the purpose of this study the following definition of terms are used throughout the study:

PowerPoint: is a proprietary software application from Microsoft, designed to enable the creation and presentation of multi-media including: text, audio, images, motion.

Perspective: refers to a way of regarding situations, facts, point of view, etc. and judging their relative importance (Collins English Dictionary, 2009).

Undergraduate: is an individual who is enrolled in an institute of higher learning, specifically a university or college, and who is pursuing a baccalaureate degree.

Teacher education: is the professional preparation of teachers who are going to be employed in different levels of the education system.

Elementary: pre-service teachers who are in training for students who receive the first stage of academic learning, typically kindergarten through grade 6.

Secondary: pre-service teachers who are in training for students who are intermediate and senior grades, typically grades 7 through 12.

Pre-service teachers: refer to those persons who are pursuing a baccalaureate degree in education, but who have not yet completed the program to be a teacher.

Classes: refer to the organized group activity where students are engaged in classroom learning in the various content areas.

Chapter 2

Review of Literature

Introduction

Instructional technologies by way of the Worldwide Web have provided educators with many avenues to complement the old way of chalk and talk (Kozub, 2010). Also, the fact that the university classrooms are most times equipped with modern technology for the delivery of courses it is no wonder then that the use of PowerPoint presentations often form a part of the professors' lectures. As a result there is research which indicates that "PowerPoint slides can increase self-efficacy, organization and clarity, interest, and professor likeability" Susskind, 2005 as (cited in Sahin, 2009), Apperson et al. (2008).

PowerPoint use in various disciplines

It was noted that there were differences in some of the various results for disciplines examined in the literature. For example, in looking at whether PowerPoint presentations significantly increase student performance and attitudes in the principles of an accounting course, Rankin and Hoaas (2001) observed four classes of introductory economics at one school over two semesters; half of the classes were taught using PowerPoint presentations and half were taught using the traditional way. Their results found no noticeable effect on student performance, student attitudes for that subject matter, or student evaluations of the instructor. Then Lowry (1999) compared student performance in lectures taught by overhead transparencies and PowerPoint in an environmental science course and found that

PowerPoint slide lecture guides significantly increased student examination scores. Lowry, in his recommendation, encouraged educators to use PowerPoint extensively.

Chen and Williams' (2009) article "Use of multi-modal media tools in an online information literacy course: College students' attitudes and perceptions" examines the relationships found between communication tools and learning experience, teaching materials, and computer skills. It concludes that student engagement and course interactions are improved through using multi-modal media objects and communication tools. The report further pointed out that in order to make certain that students remained informed and felt heard, the instructor offered students a variety of communication choices in order to meet the challenge and address the various levels of student experience with technology.

El Khoury and Mattar (2012) did an investigation to find out the impact of PowerPoint and traditional methods on the teaching learning process, the extent to which students understand materials presented, students' attitudes toward and preference for PowerPoint and traditional methods and the impact these methods have on students' performance in a financial accounting course. A cohort of university students in Lebanon was used in the study. An analysis of their data found that there was no difference in student attitude towards the two teaching methods used. However it was found that PowerPoint adversely affected student performance. In regards to students' understanding of materials, the study revealed that traditional methods were more effective as a teaching/learning tool.

Likewise Luse and Miller (2006) in the study "Business Faculty and students perceptions of the effectiveness of PowerPoint usage as a teaching learning tool" investigated the perceptions that Business Faculty and students held towards PowerPoint. More specifically, the study addressed the effectiveness of PowerPoint in business classes in terms of the teaching process, student interest and learning outcomes. Using a convenience sample of students and twenty two faculty members, PowerPoint was deemed to "to be more interactive, more professional, more understandable and more effective" (p. 139), by the students, than it was for faculty. Similarly, the students rated PowerPoint as an effective tool for student interest and teaching process more highly than faculty members. In essence, the students rated PowerPoint usage in business classes as "an effective and more engaging media for learning" (p. 144). On the other hand, faculty felt that environmental factors relating to PowerPoint usage had a greater impact on students learning than the PowerPoint itself.

Saban, Kocbeker, and Saban (2011) approached the value of PowerPoint presentations in teacher education from a different angle, in that, the participants (a group of pre-service teachers) were asked to select an article, analyze it and then use PowerPoint to share their findings with their peers. Although the participants reported that they felt intimidated or overwhelmed at the beginning of the assignment, they felt that the use of PowerPoint helped to make their presentations more effective. Among the positives that they highlighted, regarding the use of PowerPoint were: "that PowerPoint presentation makes students' learning more meaningful, interesting and attractive" (p. 923); better

management of time; greater understanding of material and the enhancement of self-confidence.

Selimoglu, Arsoy, and Ertan (2009) also studied the effect of PowerPoint in financial accounting. More specifically, they examined the effect of the use of PowerPoint on students' performance. The results of their study indicated "preferences of the students about PowerPoint presentations have no significant effect on their final scores" (p. 114).

Also (Szabo and Hastings, 2000) embarked on a study on using PowerPoint in the undergraduate classroom. Their findings show that students exposed to the use of PowerPoint slides as part of the lecture, PowerPoint slides only or traditional lectures showed no marked differences in their exam results. Relatedly, Sugahara and Boland (2006) explained that the use of PowerPoint presentations in the Accounting classroom can be both advantageous and disadvantageous.

Frey and Birnbaum (2002) in their assessment of how students view the importance of PowerPoint presentations in lectures, mention that most of the students concur that PowerPoint is an effective tool when used in lectures because PowerPoint definitely aided their note taking and their exam preparation. It is incumbent on educators to be mindful of the students they serve, especially differences in learning styles or learning preferences. Some students learn by taking notes, and consequently, educators should go at a pace such that students are able to process the information and do their own note taking, (Frey et al. 2002)

"and allowing more time for students to listen and engage in the class lecture" Hardin (2007), in (Grier & Kreiner, 2009, p.135).

The effectiveness and meaningfulness of PowerPoint usage in teacher education was also examined by Yilmazel-Sahin (2009). The participants in their study were undergraduate and graduate teacher education students who all agreed that PowerPoint has the ability to be an effective instructional tool. However these participants felt that the technology was being under-used in teacher education. In a related vein, Sugahara et al. (2006), believe that PowerPoint usage can be beneficial to learners when that technology is used "cautiously" (p.401). Likewise Kizil (in Selimoglu, Arsoy, & Ertan 2009, p. 118) supports the introduction of current education technologies in classroom as this trend can impact students' learning positively.

In their 2003 article "Effectiveness of PowerPoint presentation in lectures", Bartsch and Cobern investigated "whether students liked and learned more from PowerPoint presentations than from overhead transparencies" (Abstract, p.77), the authors utilized transparencies and two different types of PowerPoint presentations (text only information – basic PowerPoint and text which appeared in multiple ways pictures and sound, expanded PowerPoint) to test their hypotheses. Although the results of the study indicated the students had a preference for PowerPoint instead of transparencies, there was no significant difference in the students' academic performances.

Similarly, in a study done by (Apperson et al., 2006), it was shown that the use of PowerPoint in the classroom had no impact on the students' grades. However there were various reactions as to how the students perceived the use of PowerPoint in their lectures. The students found classes to be better structured, lucid and stimulating. The students gave high credit to the instructor and considered attending more classes from that same instructor if the instructor lectured with PowerPoint.

On the other hand, Ijiri (1983) posits that integrating computers into accounting courses is not really beneficial to students. He cautioned that students may refrain from taking notes and may instead rely on PowerPoint hand-outs or slides. This, he explained, might have a negative impact on the students' writing and mental abilities. Similarly, Jones (2013) concur that PowerPoint usage in lectures might impede students' active participation in class since students often opt to use hand-outs to study.

Among the positive attributes of using PowerPoint in the teaching/learning environment, Nowaczyk et al. (1998), Pippert & Moore (1999), Parks (1999), Amare (2006) (cited in Selimoglu, Arsoy, and Ertan, 2009) warned about some negative attitudes that could emerge in students. They cautioned against "decreasing the lecture-student relation and making the student sleepy" (p. 118). Turkle, (2004) concurs that learner interaction with their teacher might weaken due to the use of PowerPoint slides in the classroom. She explained that learners might get the impression that preparing for exams only using the PowerPoint slides will cause them to excel and add that students' attendance might fall if

online PowerPoint lecture slides become available. Turkle further purported that important aspects of the teaching/learning process might be lost when student interaction/collaboration is replaced with PowerPoint lectures.

An important consideration in the discussion concerning the efficacy of PowerPoint versus traditional instruction is the way the educator manoeuvres the use of PowerPoint to complement lectures and "not the use of PowerPoint itself that has the greatest effect on students' learning in the classroom" (Grier & Kreiner, 2009, p.135).

Educational theory

PowerPoint is an aspect of instructional technology that is now used widely in classrooms to assist students in processing information. However, in keeping with today's concept of constructivist learning whereby students are expected to build a self-constructed knowledge framework, Mayer and Moreno (2002) postulated that such a concept is characteristic of meaningful learning. They also state that such concepts become genuinely embedded when learners select and structure their own learning and integrate it with their current knowledge.

The fact that students are now learning with PowerPoint signals a new way in which students are likely to construct their own learning. Bodemer, Feuerlein, and Spada (2004), mentioned cognitive load in their research on active integration of information during learning with dynamic and interactive visualizations, This cognitive load according to Bodemer et al. (2004) needs to be

considered when teaching and the method involved reducing extraneous load and increasing germane load while acknowledging the student's diverse mental capacity and previous knowledge. The extraneous load is the mental effort that is required to manage how the information was presented, and the germane load are all the mental energies that were directed towards learning, structure and embedding knowledge. In the light of the foregoing, it is interesting for my research to be able to find any evidence of such cognitive overload with the use of PowerPoint, given the amount of information that is usually disseminated in that format.

According to Mayer and Moreno (2002), the concept of cognitive load was enhanced in their discussion of the dual code theory that suggests that there are different processing systems for verbal and visual materials. When the dual code theory was overlaid on cognitive load theory, it gave rise to some principles that formed the basis of instructional design in education multimedia. The theory states that each coding channel has limited cognitive load capacity but that the two channels operate independently of each other. Thus, when processing information, two mental modes are formed simultaneously, one on the basis of the aural channel and the second through the visual channel. It is these aural and visual models, Mayer and Moreno argue, that are integrated with prior knowledge to generate conceptual understanding. Therefore, it seems likely that the students in my study should be able to indicate the extent to which PowerPoint enhanced their learning through the use of these channels. However, the processing of the

information depends on whether PowerPoint is in words or pictures alone or if other features are included such as narration.

The learners and the learning environment

Atkins (1993) states that the problem in defining the effectiveness of cognitive design characteristics lie in the difficulty of knowing what is going on in the minds of the learners. He also stated that evaluators are consequently forced back on measures such as apparent time on task, apparent engagement with the task presented and subjective estimation of its effectiveness. While still commenting on the learners, Atkins (1993) mentions that learners are expected to analyze, synthesize, summarize, describe and solve problems. They are also expected to build hypothesis, explanations, definitions, categories, rules, and so on, through the study of examples and reflection on their own experience. Therefore to help students, instruction uses frequent decision points and direct involvement in games, micro-worlds, and simulations with results of the decisions that are often seen immediately. This is an important point to note for my study since the preparation of PowerPoint by instructors ought to include how the students would be actively involved with PowerPoint presentations during the lectures. In other words, it is hoped that the students experience with PowerPoint in their education classes will enable them to engage with the content and so may build on their prior knowledge. However, we are reminded that learners have a variety of information sources that are available to them but they are moved back and forth between symbolic representations of phenomena and the real-life references.

Summary and Conclusion

There still seems to be much to learn about educational technology and instructional technology as it is used in the higher education classroom. Given the above-mentioned research evidence and the fact that many university classrooms are using PowerPoint to deliver course content information, the studies in the various disciplines focused on student performance, attitudes, perspectives traditional method versus the lecture, and online in regards to technology being central to teaching and learning. The tools for teaching still need more investigation. It is this gap that this research will try to address in part, so as to provide a better understanding of its enhancement for classroom learning. It is important for the researcher to understand the use of PowerPoint as used by the lecturers, to seek to find out if the students experience any problems with its use by the lecturers, and assess its effectiveness to the students' learning process.

Chapter 3

Methodology

Research design

The researcher used a quantitative survey design for the purpose of investigating the pedagogical uses of PowerPoint in education classes among a group of university undergraduate elementary and secondary students. The survey design allowed the researcher to generalize from a sample to a wider population and enabled the researcher to make inferences from the data that were collected from the participants. The survey was the preferred choice additionally because it was less costly to design, and response time for data collection was rapid. Ethics approval for the study was obtained from the Research Ethics Board of the University of Alberta.

Sample

Purposive sampling was used for this study. According to Johnson and Christensen (2008), purposive sampling is "a non-random sampling technique in which the researcher solicits persons with specific characteristics to participate in a research study" (p.239). This kind of sampling worked well as the participants were selected from the population in which the researcher identified students according to their undergraduate elementary and secondary education course of study. The researcher used a non-random sampling technique to obtain the sample, so that each member of the population had an equal and known chance of being selected. The selection was done from the classes of undergraduate

elementary and secondary education at the university. They were chosen because they are present students of the university and are currently taking the undergraduate education courses as part of their studies. Potential participants were apprised of the study, and those willing to participate signed a consent form (see Appendix A). A total of 35 students were given questionnaires and 33 students completed the survey. Of the 33 questionnaires collected, 4 were discarded due to only demographic data answered or incomplete responses to items. This resulted in a total sample size of 29 participants.

Instrument

The researcher used a questionnaire (see Appendix B), to obtain data for the study. The researcher constructed a self-designed questionnaire that asked the same questions of all individuals in the sample. This is in keeping with Bastick and Matalon (2004) who posit that a "questionnaire is a measure that presents a set of written questions to which all individuals in a sample are asked to respond" (p. 318).

The questionnaire consisted of 13 items. A 10-item Likert scale which asked for responses to be ticked and 3 open-ended questions which required written responses on a blank line that was provided. Each Likert response was rated on a five point scale from strongly agree to strongly disagree, with a middle score of 'not sure'. Items for the questionnaires included a biographic and demographic profile as well as key questions which served to elicit responses to the research questions.

Responses about PowerPoint focussed on the teaching/learning process, organization of the lecture, slide format, handouts for note taking, students' use for coursework and examination preparation, class participation, delivery style of lecturer and attentiveness in classes. The three open-ended items asked students for responses about: 1) whether or not they would like to see PowerPoint continue to be used as part of lectures in the duration of their courses; 2) if they faced any challenges with the use of PowerPoint in their classroom learning; and 3) if there was an approach or technology that they know of that would be better suited to their class than PowerPoint. The students completed the survey anonymously and they controlled the response process since they filled out the questionnaire at their convenience and answered the items in any order.

Validity and Reliability

For a study to be generalizable beyond the sample selected, it is important that the researcher ensure reliability and validity of all the procedures of the research and the use of the instrument. Joppe (cited in Bashir, Afzal, & Azeem, 2008) defined reliability as "the extent to which results are consistent over time and an accurate representation of the total population under study is referred to as reliability and if the results of a study can be reproduced under a similar methodology, then the research instrument is considered to be reliable" (p. 36).

Johnson and Christensen (2008) explained that validity is the "appropriateness of the interpretations, inferences and actions that we make based on test scores" (p. 151). In order to ensure content validity a pilot test of the questionnaire was undertaken with some selected undergraduate elementary and

secondary education students of the university population who were not included in the sample for the research study. The responses to the items from the students in the pilot emphasized the importance of ensuring that the questionnaire measured what is intended to be measured for the specific group of people in a certain context, so that the analyses made on the basis of the data responses are accurate. As a result of the pilot test, some items were reworded and those thought to be irrelevant or ambiguous were omitted or replaced by more suitable ones. This was done to ensure that the responses reflect accurately both reliability and validity

Procedure for data collection

The researcher made initial contact with the student population to ascertain those students who are pursuing undergraduate elementary and secondary education. Once that was established a check was made with the Faculty of Education for the schedule of education courses taught along with the lecturers. The researcher sought audience with the lecturer to identify those lecturers who use PowerPoint in their lectures and discuss with them the feasibility of conducting the research study. Following up on those discussions and getting approval, then a formal application was made by the researcher to the university's research ethics board for approval to conduct the research at the institution through the administering of questionnaires.

Upon receiving ethics approval (see Appendix A), the researcher made initial contact with the undergraduate elementary and secondary education classes for selection of the sample (see Appendix B). The lecturer of the selected

students was given a detailed explanation of the research procedure as it relates to the ethical considerations for the research. When the sample was selected the researcher informed the participants of the purpose of the research, and asked for their willingness to participate. The participants were made aware of the concept of voluntary consent. The researcher informed all participants that there would be no coercion in them participating in the research and also of their right to withdraw from the study without any consequences.

Each participant was given a numerical identifier for anonymity and each one was asked to sign a consent form that was prepared or adapted by the researcher. The questionnaires (Appendix C) were administered at the university campus during a regular classroom activity for the duration of approximately 15 minutes. After the completion of the questionnaires, the researcher collected them and stored them in a safe and confidential place for sorting all the collected data, coding of the data, and eventual analysis of the data for presentation of the results.

Method of data analysis

The researcher analyzed the data using SPSS. The software was also used to present the results. This included: tables, figures, bar graphs, pie charts and histograms. To elucidate, pie charts, for example, show whether students indicated more similarities or differences in their effects of learning with PowerPoint. Pie charts enable easy visual comparison. A bar graph was used to illustrate the various challenges experienced by the students in using PowerPoint. Descriptive statistics, specifically mean and standard deviation were used to show how the utilization of PowerPoint was most prevalent among the students.

Pearson product-moment correlation was employed to show how the response from one question impacted the response of another question.

Ethical considerations

In applying the principles to conduct the research study, the researcher considered the confidentiality of the undergraduate elementary and secondary education students involved in the study. The researcher ensured that the students entered the research study voluntarily with a very clear understanding of the nature of the study. The researcher informed each student about what will occur during the research study, the information to be disclosed to the researchers and the intended use of the research data that will be collected.

The researcher also ensured that all information collected from the participants was kept in strict confidence and that no unauthorized persons would have access to same. In this study, the researcher, and her supervisor have access to the data collected, however the participants are not identified, they will remain anonymous or their names will be changed for reporting purposes.

Delimitations and Limitations

The study was delimited to pre-service education teachers at a single post-secondary institution. The sample consisted of a mix of elementary and secondary students. This sample represented the intended population, and it was a convenience sample.

The research study is limited only to the university setting where it is being conducted. In terms of limitations, first, the researcher had to balance time and work in order to get the questionnaires completed. Second, responses to the items on the questionnaire may not have been answered honestly. It was also noted that only demographic data was answered on some and on others answers were incomplete. The researcher's decision to select a university which she attends, and choose such a small sample from the faculty to which they all belong, might bias participants' responses on the questionnaire.

Chapter 4

Results and Discussion

Introduction

The purpose of this chapter is to present the results on the pedagogical uses of PowerPoint in education classes among a group of university undergraduate elementary and secondary students. The data were collected from questionnaires and participants who were undergraduate students. The results are organized in two sections that provide descriptive statistics, and the results from additional quantitative analysis.

In analyzing the data the researcher sought answers to the following questions:

1. How do the undergraduate elementary and secondary students perceive the use of PowerPoint presentations in their education classes at the University of Alberta?
2. Do these students believe that their learning has been enhanced by the use of PowerPoint presentations?
3. What specific challenges to classroom learning do the undergraduate elementary and secondary students face in the use of PowerPoint as part of the teaching-learning process?

Section A

Descriptive Statistics

Results

The data in Table 4.1 revealed that a total of twenty-nine (29) participants were accounted for in the sample, males represented 34.5% percent, while females were 65.5%.

Table 4.1

Demographic data of sample

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	MALE	10	34.5	34.5	34.5
	FEMALE	19	65.5	65.5	100.0
	Total	29	100.0	100.0	

A total of 58.6% of students are in the 18 - 29 years category age group and 34.5% students in the 30 – 39 years category. Only two participants are in the 50-59 years category and this accounts for 6.9% (Table.4.2).

Table 4.2

Age group of participants

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	18 - 29 YRS	17	58.6	58.6	58.6
	30 - 39 YRS	10	34.5	34.5	93.1
	50 - 59 YRS	2	6.9	6.9	100.0
	Total		100.0	100.0	

Table 4.3

Type of university undergraduate program

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	B.Ed ELEMENTARY	12	41.4	41.4	41.4
	B.Ed SECONDARY	17	58.6	58.6	100.0
	Total	29	100.0	100.0	

The data in Table 4.3 show that 58.6% of the participants are pursuing the undergraduate secondary education program. This is the same percentage as those

participants in the 18-29 age groups. But Figure 4.1 shows that in both the elementary and the secondary programs, there are more female students.

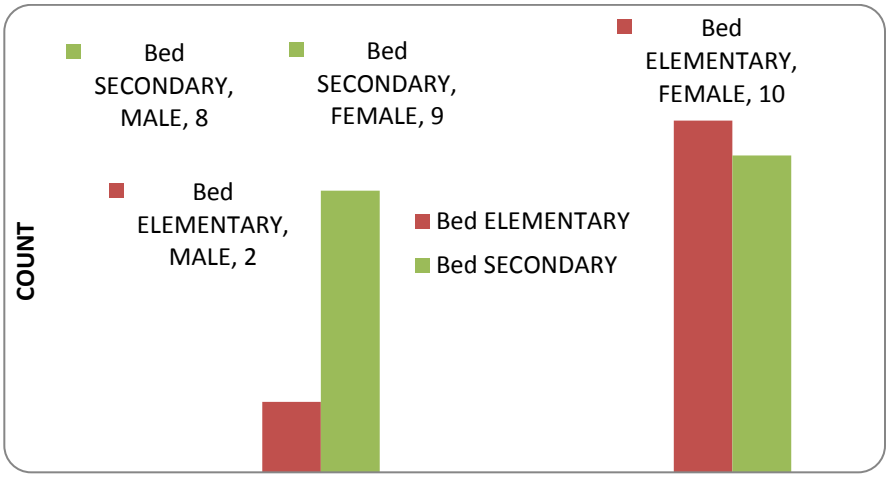


Figure 4.1: Type of university program by gender

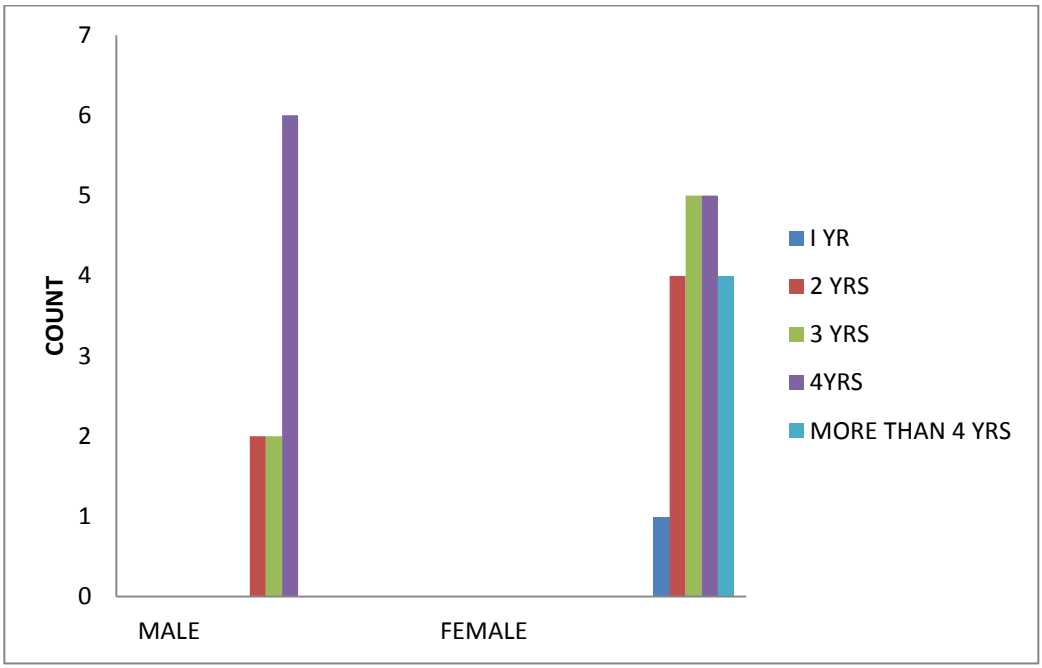


Figure 4.2: Years in university program by gender

Additionally, Figure 4.2 shows that the male participants have a high of 4 years in attendance at the university. For the female participants, there is an even

spread between their 3 and 4 years, and their 2 and more than 4 years of attendance at the university. Yet, only among the females are there participants who attended for just 1 year.

Table 4.4

Years in undergraduate program

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 YR	1	3.4	3.4	3.4
	2 YRS	6	20.7	20.7	24.1
	3 YRS	7	24.1	24.1	48.3
	4 YRS	11	37.9	37.9	86.2
	MORE THAN 4 YRS	4	13.8	13.8	100.0
	Total	29	100.0	100.0	

Overall, Table 4.4 shows that 37.9% indicates those participants who are in the undergraduate program for 4 years, 13.8% for more than 4 years, followed by 24.1% for 3 years and 20.7% for 2 years. Only 3.4% are shown as having been in the undergraduate program for 1 year.

Section B

Quantitative Research Questions

Research Question 1: How do the undergraduate elementary and secondary students perceive the use of PowerPoint presentations in their education classes at the University of Alberta?

The results revealed that the majority of the students had positive perceptions about the use of PowerPoint in lectures, even though students tend to be neutral about their opinions on if they enjoy classes taught where information is presented on a traditional chalkboard, whiteboard, or by overhead projector.

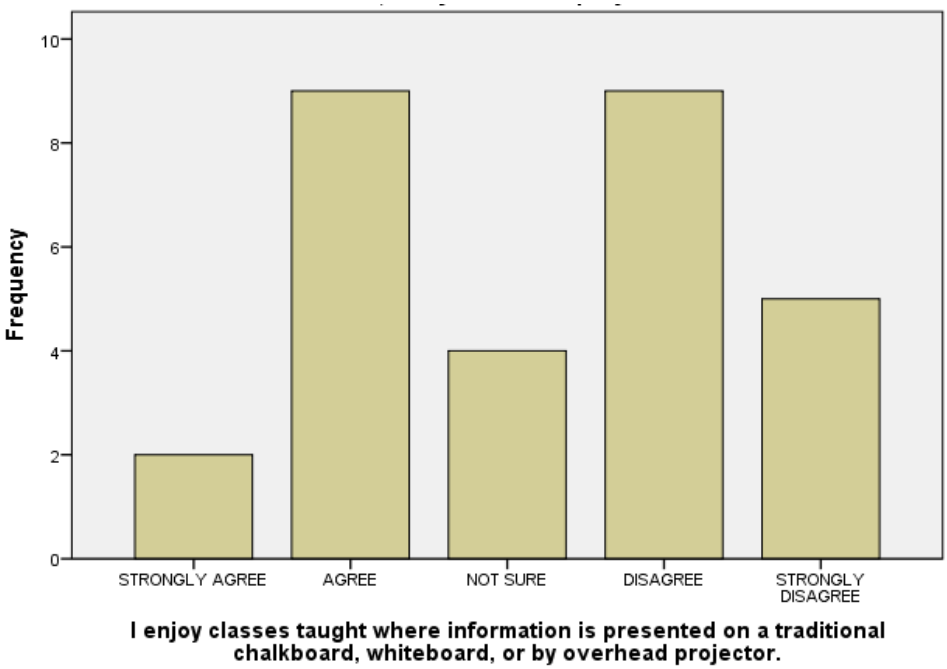


Figure 4.3: Enjoyment of classes taught using different methods

Respondents were neutral when they were asked if "I enjoy classes taught where information is presented on a traditional chalkboard, whiteboard, or by overhead projector" therefore a conclusion could not be drawn from the responses.

Table 4.5

Correlations between attention and classes taught using different methods

Correlations

	I am more attentive when PowerPoint presentations are used as part of lectures.	I enjoy classes taught where information is presented on a traditional chalkboard, whiteboard, or by overhead projector.
Pearson Correlation	1	-.523**
Sig. (2-tailed)		.004
N	29	29

**. Correlation is significant at the 0.01 level (2-tailed).

Table 4.5 shows a moderate negative correlation between attention to PowerPoint presentations and enjoyment of classes being presented with traditional chalkboard, whiteboard, or by overhead projector. However, it is statistically significant at the 0.01 level.

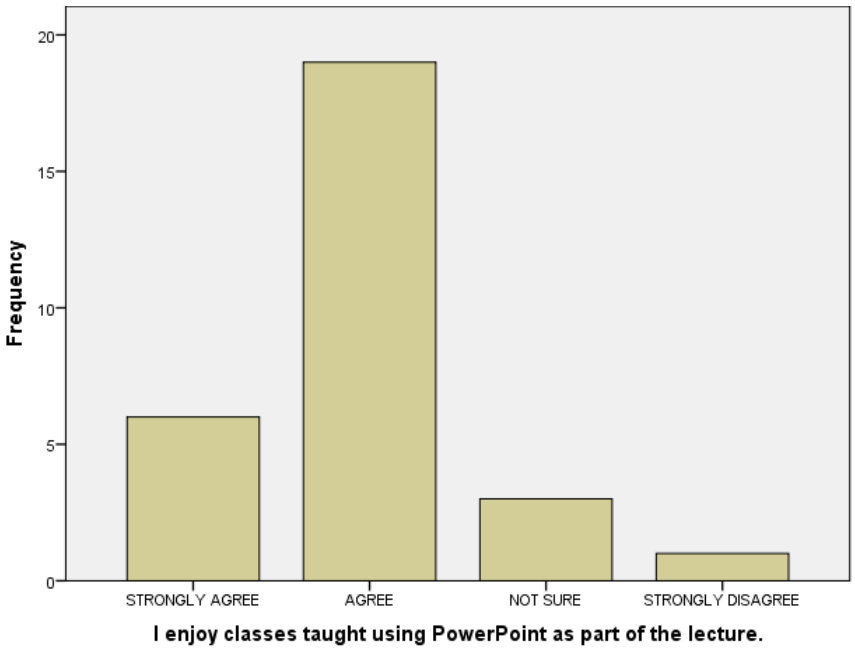


Figure 4.4: Enjoyment of classes taught using PowerPoint as part of lecture

The majority of respondents agree that they enjoy classes taught using PowerPoint as part of the lecture which accounts for eighty six percent (86%) of the students either strongly agreed or agreed that they enjoyed classes taught using PowerPoint presentations as part of lectures. A mere seven percent (7%) of the respondents agreed that they enjoyed classes taught using PowerPoint presentations only, whereas seventy six percent (76%) disagreed or strongly disagreed with this item. Fifty five percent (55%) of respondents felt that the classes were more engaging and interesting when PowerPoint was used in lectures. The structure of the lectures was perceived by the respondents to be clearer when PowerPoint presentations were used. Seventy nine percent (79%) of the students agreed or strongly agreed that the structure of the lectures was clearer when PowerPoint was used. Fifty two percent (52%) of the students either agreed or strongly agreed that they show more attention when PowerPoint presentations

were used as part of lectures. The above responses show that PowerPoint used as part of lectures is the preferred way by students in the teaching learning process.

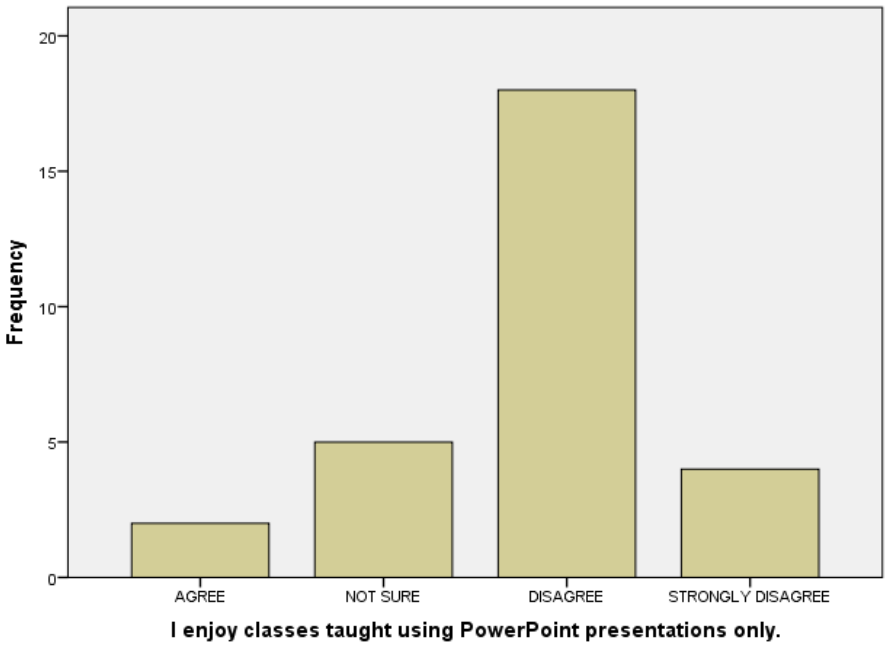


Figure 4.5: Enjoyment of classes taught using PowerPoint only

Figure 4.5 show that the majority of respondents disagree with the statement, that they enjoy classes taught using PowerPoint presentations only, while Figure 4.6 show that the students also felt that PowerPoint slides were helpful in their course assignments and exam preparations. The fact that majority of the students disagreed with the statement that they enjoyed classes taught using PowerPoint only shows that students are still supportive of the traditional methods as part of the teaching learning process. Also, on the matter of note-taking, eighty six percent (86%) of the respondents agreed or strongly agreed that PowerPoint slides greatly assisted them (see Figure 4.7). The responses to the open-ended questions explain that due to the organization of the PowerPoint lectures it is easier to take notes and prepare for exams.

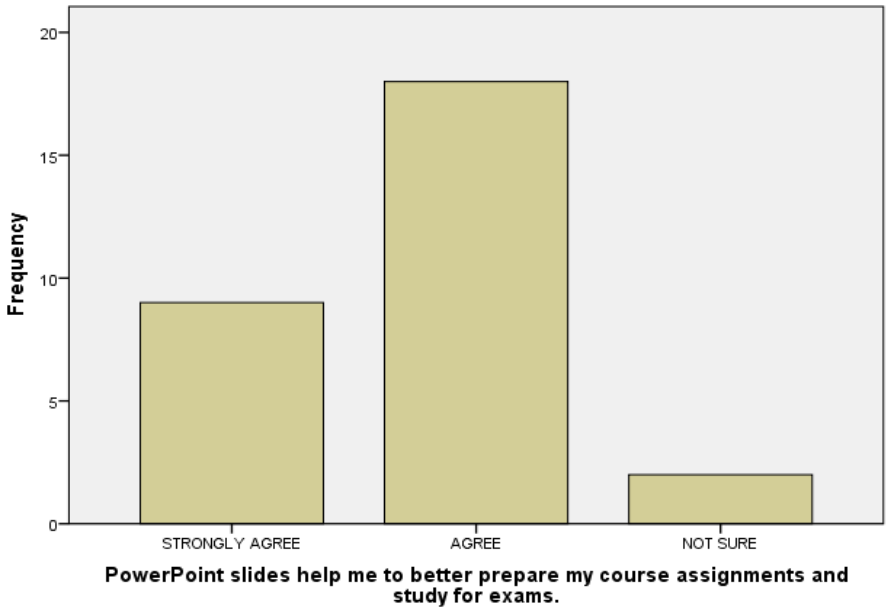


Figure 4.6: PowerPoint slides help with homework and exam preparation

Ninety three percent (93%) of the students agreed or strongly agreed that PowerPoint slides help them to better prepare their course assignments and study for exams.

Table 4.6

Correlations between PowerPoint slides and learning effectively

Correlations

PowerPoint slides help me to better prepare my course assignments and study for exams.		I believe that I learn more effectively when PowerPoint is used as part of lectures.
Pearson Correlation	1	.484**
Sig. (2-tailed)		.009
N	29	28

**. Correlation is significant at the 0.01 level (2-tailed).

In Table 4.6 it can be seen that there is a moderate positive correlation between how the PowerPoint slides help students to better prepare course

assignments and study for exams, and learn more effectively when PowerPoint is used as part of lectures. The relationship between both is statistically significant at the .01 level.

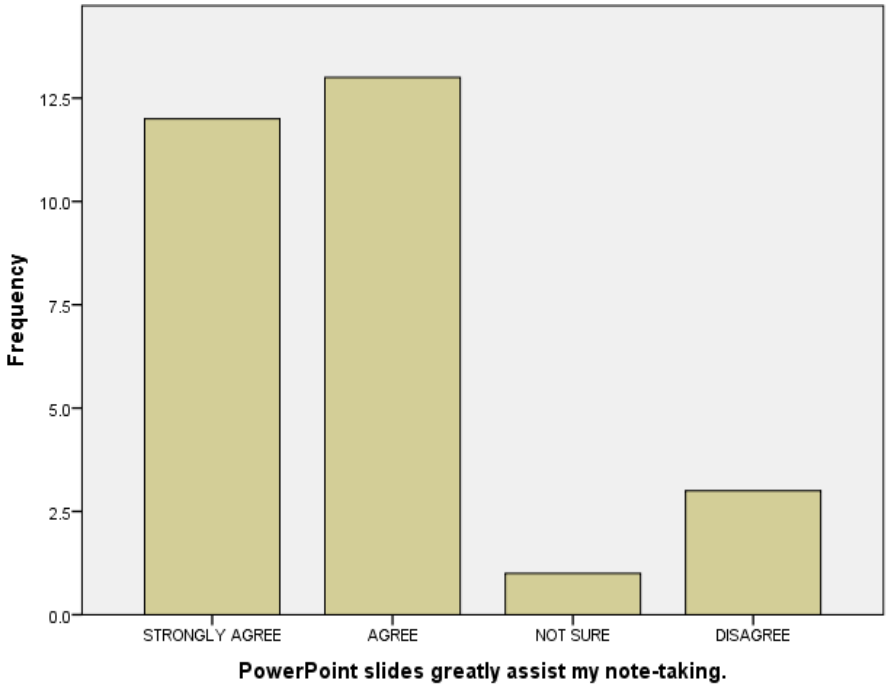


Figure 4.7: Enhancement of PowerPoint slides for note-taking

Figure 4.7 shows that the majority of the respondents agree that PowerPoint slides them immensely with taking notes.

Table 4.7

Correlations between PowerPoint slides and classes taught using different methods

Correlations

	PowerPoint slides greatly assist my note-taking.	I enjoy classes taught where information is presented on a traditional chalkboard, whiteboard, or by overhead projector.
Pearson Correlation	1	-.668**
Sig. (2-tailed)		.000
N	29	29

**. Correlation is significant at the 0.01 level (2-tailed).

The data in Table 4.7 shows that there is a negative correlation at the 0.01 level of significance between PowerPoint slides assisting students with note taking and their enjoyment of classes taught where information is presented on a traditional chalkboard, whiteboard, or by overhead projector. This is due to the fact that students were neutral in their responses to "I enjoy classes taught where information is presented on a traditional chalkboard, whiteboard, or by overhead projector" but at the same time majority of the students agreed or strongly agreed that PowerPoint slides greatly assist their note taking.

Research Question 2: Do these students believe that their learning has been enhanced by the use of PowerPoint presentations?

The data in Figure 4.8 show that the majority of the respondents agree that they find that classes taught using PowerPoint presentations are more engaging and interesting.

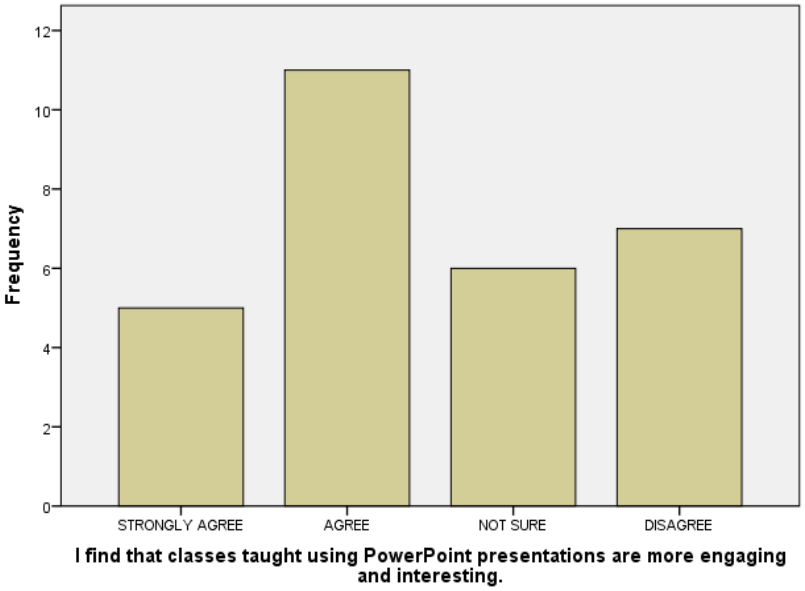


Figure 4.8: Engagement and interest of PowerPoint presentation

Table 4.8

Correlations between enjoyment of classes taught using different methods and classes taught using PowerPoint presentations as being more engaging and interesting

Correlations		
I enjoy classes taught where information is presented on a traditional chalkboard, whiteboard, or by overhead projector.		I find that classes taught using PowerPoint presentations are more engaging and interesting.
Pearson Correlation	1	-.484**
Sig. (2-tailed)		.008
N	29	29

**. Correlation is significant at the 0.01 level (2-tailed).

In Table 4.8, the data show that there is a moderate negative correlation at the 0.01 level of significance between the enjoyments of classes taught where information is presented on a traditional chalkboard, whiteboard, or by overhead

projector and classes taught using PowerPoint presentations as being more engaging and interesting. It suggests that perhaps the visual aids, images and sounds grabs the students attention resulting in them being more engaged in the lecture and showing more interest.

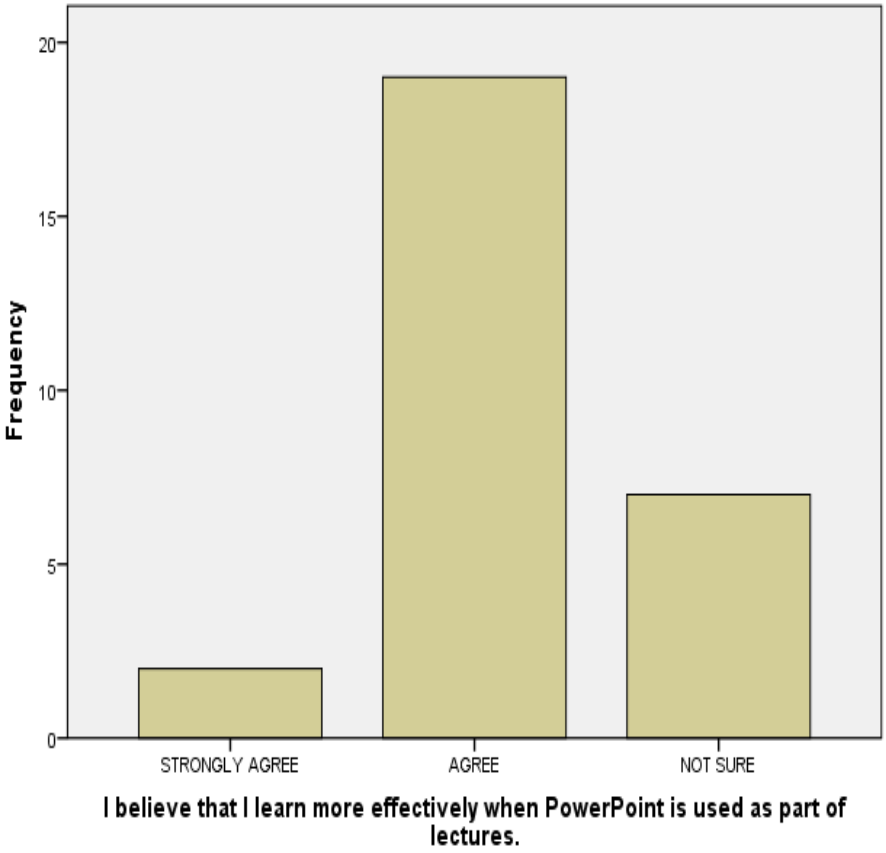


Figure 4.9: Effective learning when PowerPoint is used as part of lectures

Figure 4.9 show that respondents agree that they learn more effectively when PowerPoint is used as part of lectures. Only a few strongly disagreed and this belief could be as a result of how the PowerPoint slides are presented in the classroom sessions. This belief is further seen in Figure 4.10 which shows that most of the respondents agree that PowerPoint presentations help to make the structure of the lectures clearer.

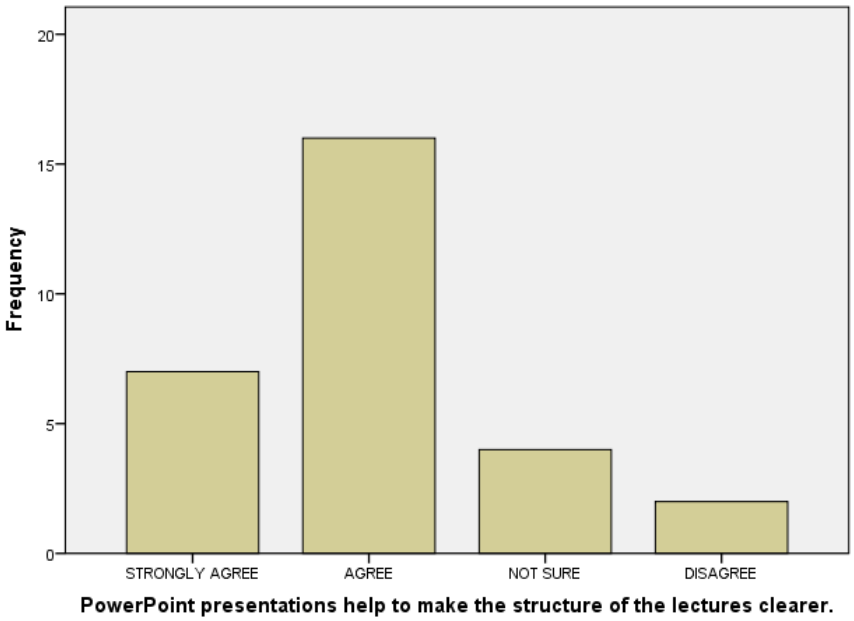


Figure 4.10: Effective PowerPoint presentations that make for clearer structure

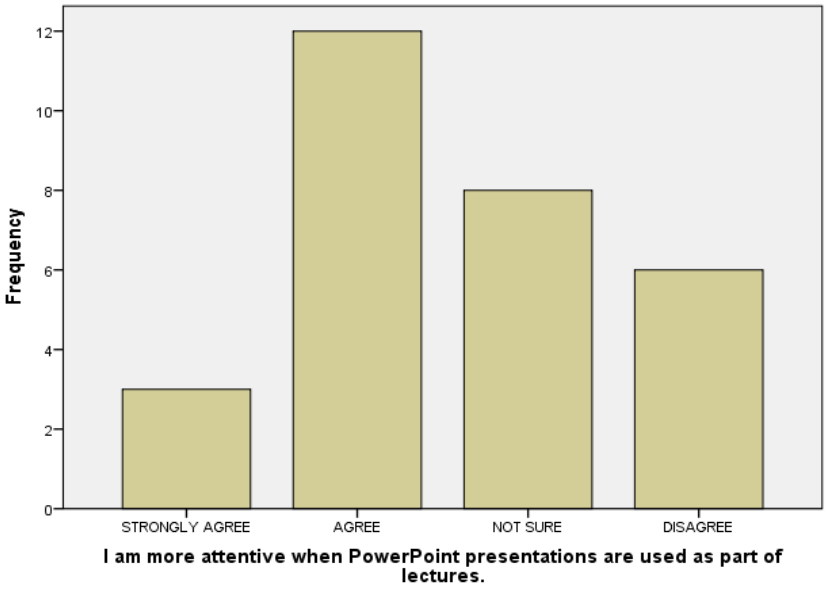


Figure 4.11: Attention to PowerPoint within lectures

Figure 4.11 show that the majority of the respondents agree that they are more attentive when PowerPoint presentations are used as part of lectures.

Table 4.9

Correlations between attention in lectures when PowerPoint presentations are used as part of lectures and enjoyment of classes taught using different methods

Correlations

	I am more attentive when PowerPoint presentations are used as part of lectures.	I enjoy classes taught where information is presented on a traditional chalkboard, whiteboard, or by overhead projector.
Pearson Correlation	1	-.523**
Sig. (2-tailed)		.004
N	29	29

**. Correlation is significant at the 0.01 level (2-tailed).

The correlation is negative and statistically significant at the 0.01 level between attention when PowerPoint presentations are used as part of lectures and enjoyment of classes taught where information is presented on a traditional chalkboard, whiteboard, or by overhead projector. This means that the use of the different methods seem to stimulate and maintain the interest of the students.

Table 4.10

Group statistics showing attention to PowerPoint by age

Group Statistics

	AGE GROUP OF PARTICIPANTS	N	Mean	Std. Deviation	Std. Error Mean
I am more attentive when PowerPoint presentations are used as part of lectures.	18 - 29 YRS	17	2.8824	.85749	.20797
	30 - 39 YRS	10	2.0000	.94281	.29814

Respondents who are 18-29 years of age with a mean of 2.88 agree more than respondents who are 30-39 years of age with a mean of 2.00 that they are more attentive when PowerPoint presentations are used as part of lectures. This suggests that the younger age group seems to be more focused towards the PowerPoint than those in the older group. Maybe in this age of technology the younger age group feels more comfortable relating to such presentation which is mostly visual since they are living in this digital era.

The majority of respondents agree that they are more attentive when PowerPoint presentations are used as part of lectures. On a scale from 1 to 5 the highest mean of 2.58 is allocated at "I am more attentive when PowerPoint presentations are used as part of lectures" (see Figure 4.11) which indicates that most respondents agree with this statement. This is evidence that there is some aspect of the PowerPoint which helps to keep the students focussed on the lectures and they are able to express this fact. It can mean that they will be further motivated to be engaged in their lectures.

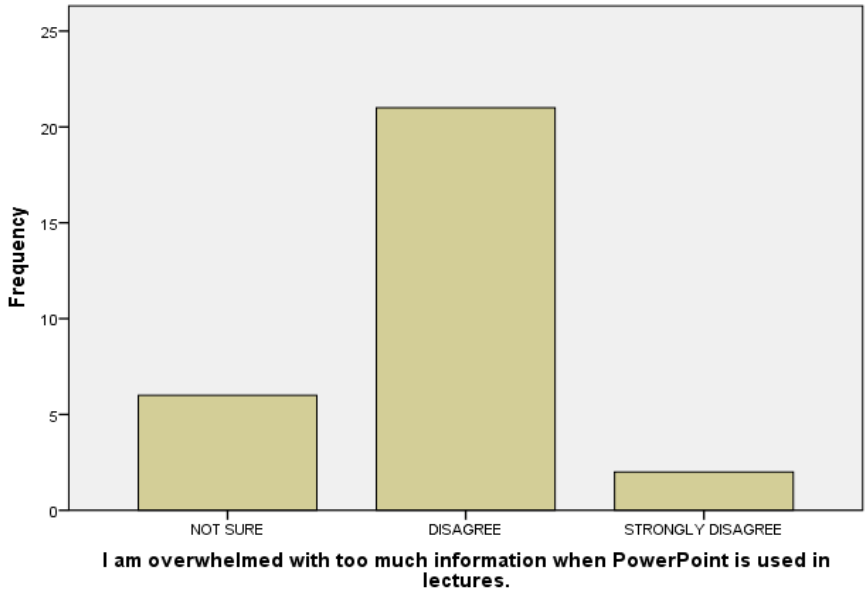


Figure 4.12: Overwhelmed with too much information when PowerPoint is used in lectures

Seventy nine percent (79%) of the student disagreed or strongly disagreed that they were overwhelmed with too much information when PowerPoint is used in lectures. In fact, "I am overwhelmed with too much information when PowerPoint is used in lectures," had the highest mean score of 3.86. This means that the majority of the students do not agree that PowerPoint offers too much information, and instead are really satisfied with whatever information they receive from the PowerPoint in the lectures. Figure 4.5 supports the view that students do not enjoy classes taught using PowerPoint only. This response had the second highest mean score of 3.82 for those who disagreed with "I enjoy classes taught using PowerPoint presentations only".

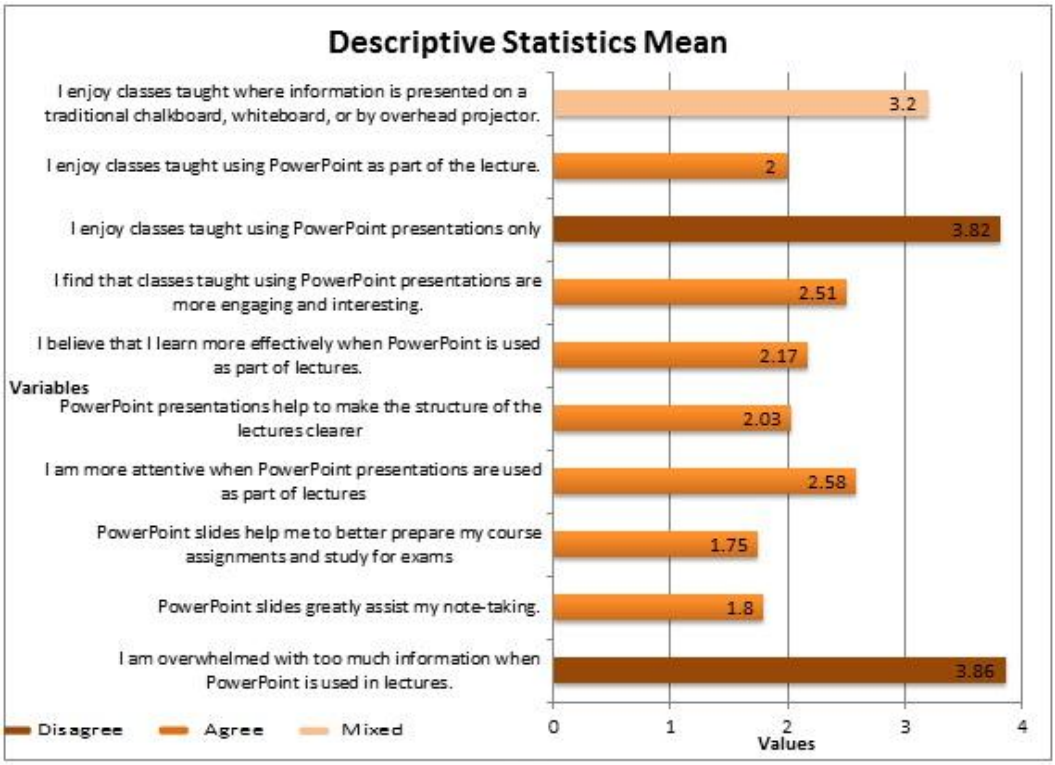
Students agreed that there was attention and engagement with the use of the PowerPoint. The data in Table 4.11 showed a mean score of 2.58 for attention and 2.51 for engagement. This was followed by a mean score of 2.17 for learning

more effectively, 2.03 for making the structure of the lecture clearer and 2 for enjoyment of PowerPoint as part of the lecture.

The mixed responses showed a mean score of 3.2 for enjoyment of classes taught where information is presented on a traditional chalkboard, whiteboard, or by overhead projector. This could mean that they still wanted to be exposed to the PowerPoint while at the same time getting classes from which they were already familiar.

Table 4.11

Perceptions about use of PowerPoint



On a scale from 1 to 5 the highest mean of 3.86 is allocated at "overwhelmed with too much information when PowerPoint is used in lectures" which indicates that most respondents agree with this statement.

Research Question 3: What specific challenges to classroom learning do the undergraduate elementary and secondary students face in the use of PowerPoint as part of the teaching-learning process?

All 29 respondents answered the first open-ended question on whether they would like to see or not see PowerPoint presentations continue to be used as part of lectures in the duration of their course. Twenty-five of the students mentioned that they would like to see PowerPoint presentations continue to be a part of their classroom lectures, while the remaining four gave mixed reactions as follows:

- It does not matter.
- PowerPoint presentations are handy to retrieve missed information however it provides students with an excuse not to go to class.
- It depends on a lot of aspects. If it's just PowerPoint it doesn't always help. If the PowerPoint is just what the professor is saying then it is not helpful. If it elaborates in more details it helps.
- I enjoy "good" PowerPoint presentations that have been prepared thoughtfully.

In the case of the students who wanted to see PowerPoint continue to be part of their lectures, data showed that they would like to see PowerPoint used in more lectures purely based on the fact that it helps for exam preparation. It was also stated that they would like to see PowerPoint continue to be used in lectures because it helps to organize notes and to prepare for exams.

It was interesting to note that students indicated that PowerPoint is just a tool and that it should be used properly, and not be the center point of a class. However, students also stated that once PowerPoint presentations are constructed effectively, they can help organize the flow of technical information, provide good summary of lectures, and lay out the information so that it is easy to follow. Most participants believe that PowerPoint greatly enhances lecture-based courses and are more beneficial when given before the lecture. It is a useful tool when information is compact and succinct and when presentations provide a clear, concise delivery of the information.

Some students like PowerPoint's visual representation of what they should be taking down as notes and to obtain them prior to class, so as to make side-notes or to review the presentation in advance or to print it off before lectures. They also liked to have most of the slides completed so that they are free to think and write extra notes. Others like to be able to print handouts and refer back when the presentation seemed to contain too much information. Other students indicated that PowerPoint is good but limited in scope, and they believe the actual lectures and experiences are more effective.

The second open-ended question asked students to tell of any challenges they had with the use of PowerPoint in their classroom learning. Twenty-seven students answered; five students said they had no challenges with the use of PowerPoint in their classroom learning. One student said there was no challenge, but added that PowerPoint helps him/her to stay organized. One student indicated

that he/she was not sure if there were challenges or not. Twenty students expressed numerous challenges, summarized as follows:

- Sometimes the teacher/professor rushes through the slides too fast or spends too much time on one slide.
- Sometimes they aren't used effectively. If they only have pictures and no explanations, that is not helpful.
- Sometimes lecturers go through the slides too fast
- When the slides are sent late or out of order to students, we start to rely on them and become confused and frustrated when not available.
- Sometimes the professor just read off the PowerPoint. I find it not so beneficial.
- Only if the teacher flips through the slides too quickly. Also I prefer PowerPoint handouts so I can take down notes on what the teacher is saying about the PowerPoint, rather than just the PowerPoint.
- If there is too much information on a slide it can be overwhelming. It encourages rote memorization of facts, not real authentic learning.

The data also showed that students feel that it is harder to stay focused on the class content because the information is so rigidly laid out and that it is not as easy to add additional notes, because there usually is not a lot of space on the slides. The data also indicated that PowerPoint presentations with pictures are good for learning, but too much text or information can be very dry and boring since the focus is too much on the information on the screen as opposed to what the instructor is saying. It was also stated that sometimes one can get confused

trying to keep up with what the lecturer is saying and following the slides at the same time. If a professor places too much information on the slides this makes for a slow, tedious class.

Those students who said they had no challenges stated that for the most part PowerPoint works well. It is creating effective, informative and engaging slides without taking away or overwhelming the slide or the learning. They enjoy it especially if the presentations are posted on-line and that they have a physical copy for note-taking. Although PowerPoint helps students to stay organized, it seems that many students probably use presentations as "summary" notes to lectures.

The third open-ended question asked students to say if there is an approach or technology they know that would be better suited to their class than PowerPoint. Of the 29 respondents, 4 were unresponsive and 1 student was not sure. Three students said that they could not think of any other technology and ten students answered no. Eleven of the students gave answers as follows:

- Notebook (Smart board) software could be used and potentially more useful since flash videos are embedded and hyperlinks are not needed.
- Can't think of any for this class, but for teaching elementary, I feel it's very important to use multiple teaching methods so the students don't lose attention.
- I'm not sure because this class is based on technology with teaching/learning.
- Balance between PowerPoint and other aspects/techniques.

- For the most part PowerPoint works, but it is important to have hands on task that the students can do as well, which this class seems to encompass.
- I think a class website that contains the PowerPoint is the best approach for me. I feel most supported.
- I think it all depends on the class size and subject matter; big classes are easier to educate with PowerPoint but classes such as Math are better suited with whiteboard.

The data indicates that some students are of the opinion that working on the computer along with students can be a good alternative approach. The use of the Smart board and the White board is also noted as a favorable mix of technology

Table 4.12.

Group statistics showing feelings about volume of PowerPoint information during lectures

Group Statistics

	NUMBER OF YEARS IN UNIVERSITY PROGRAM	N	Mean	Std. Deviation	Std. Error Mean
I am overwhelmed with too much information when PowerPoint is used in lectures.	1 YR	1	5.0000	.	.
	4 YRS	11	3.7273	.46710	.14084

Respondents who have 1 year in the program with a mean of 5.0 agree more than respondents who have 4 years in the program with a mean of 3.72 that

they are overwhelmed with too much information when PowerPoint is used in lectures. This could be due to the fact that first year students are not accustomed to the volume of lectures using PowerPoint given at the university level, as some students might just be coming out of high school environment. On the other hand students in their fourth year of study are already seasoned to the volume of lectures presented in classroom when PowerPoint is used, thus it is not surprising that the first year students would be more overwhelmed with too much information.

Discussion

Largely, it seems that PowerPoint had a positive effect on the teaching learning process of undergraduate elementary and secondary students. Some students indicated neither positive nor negative feelings regarding their preference for classes taught where information is presented via traditional methods. It was clear that students welcomed the use of PowerPoint as part of their lectures, but that they would not enjoy classes that consisted solely of PowerPoint presentations. The general perception is that students believe that they learn more effectively when PowerPoint is used as part of lectures. This was clearly indicated when students stated that once PowerPoint is carefully prepared, they can follow the lesson as it flows smoothly. It was also noted that students were greatly helped by the presentations in making notes and preparing for examinations.

Based on the results it is evident that PowerPoint is the dominant technology in the students' classes. It is used to engage students with the various

learning and stimulate their interest so that learning and teaching can proceed at the student's rate of learning. Students particularly enjoy the visual images, but the challenge seems to lie in the way the information is imparted, and if presentations have too much textual content.

Some major benefits of the PowerPoint according to the results reflect students' self-preparation and clearer structure of the lectures. Students prefer it if slides are made available prior to class lectures as students rely on the printable form for their note-taking and to follow during the lectures. This approach enables them to organize themselves for learning and understanding of the material to be used in the classes. PowerPoint also gives a good summary of the lesson.

It was noted that the challenge of absenteeism was mentioned by students who contend that some students do not attend once PowerPoint materials are obtained before classes. It is likely that such students believe that the PowerPoint presentations comprise the total information presented in class, and in consequence, they can frequently skip the formal classroom setting. There is also the amount of information one has to deal with from PowerPoint presentations, especially if the professor goes through the content quickly. In such cases, students do not get a chance to seek clarification of some ideas and sometime feel lost. Information presented by PowerPoint should not be overcrowded on particular slides, or be excessive for students to read or digest in the time available. Excess information, or crowded slides often results in students becoming 'turned off' from the PowerPoint presentations especially in lectures.

The idea of a turned off student as a bad learner was noted by Carl Rogers in the 1960s, especially in light of poor computer-assisted instruction, which was the predominant instructional technology of the day (Olsen & Hergenhahn, 2013).

It is therefore imperative that educators pace their lectures and be mindful of the length and depth of the presentation so that students can follow in the class in a comfortable manner.

Chapter 5

Conclusion, Implications and Recommendations

Conclusion

The literature indicates that there is some evidence to support the extent to which technology is being used in the teaching learning process and more specifically how students perceive the use of PowerPoint as part of lectures. However technology has caused many changes worldwide including the way educators impart knowledge in the classroom. One such change is the shift from the traditional methods of teaching and learning to a more digital friendly environment. Today, a method that is prevalent in the classroom is the use of PowerPoint presentations as part of the lectures.

This conclusion is supported by the experiences of the undergraduate elementary and secondary pre-service teachers. Eighty six percent (86%) of the students either strongly indicated or indicated that they enjoyed classes taught using PowerPoint presentations as part of lectures. This seems to suggest that most of the students agreed that PowerPoint presentations should continue as part of their lectures. It was important to note that the students expressed the belief that PowerPoint's visual representation helped to keep them attentive and engaged on whatever was being taught in the lectures. This view is supported by Chen and Williams' (2009) who conclude that student engagement and course interactions are improved through using multi-modal media objects and communication tools.

Yet, it must be noted that some of the students stated that even though PowerPoint is good, it is limited and they believe that the actual lectures and

experiences are more effective in classes. Some students revealed that while they believe that they learn more effectively when PowerPoint is used as part of lectures in general, effective learning is not the case if the professor just reads off the PowerPoint slides or flips through the slides too quickly. For some students, when the slides are sent late to students, or they are not in order, there is the tendency to become confused and frustrated. This could be as a result of a dependency on PowerPoint which has been allowed to develop. Thus, the challenge of the students is not to become too dependent upon PowerPoint. For some students, an additional challenge is to contend with more information on a small number of slides or on many slides.

It was Mayer and Moreno (2002) who theorized about meaningful learning in which the concepts become genuinely embedded when learners select and structure their own learning and integrate it with their current knowledge. This was seen in the results when students indicated that they used the PowerPoint slides to assist them in their note-taking, prepare for their course assignments and study for exams. The students in the class created their own meanings from the PowerPoint presentation to become familiar with the course content.

Comparatively, from the correlations of perception that were done, it can be said that the analysis revealed zero (negative) significant relationship and a strong (positive) significant relationship between the perceptions. The researcher can therefore conclude that there is some significant positive relationship in some aspects of the perceptions and learning using PowerPoint in undergraduate teacher education classes.

Implications

Technology impacts teacher education that has been mandated to incorporate the knowledge of various methods for today's classrooms. Training has to be sufficiently flexible to encourage pre-service teachers to use the available technology in their delivery of subject content.

Instructional technology methods for dealing with larger student numbers must consider the delivery mode as it is incorporated into the conventional classroom methods. Planning and training for classroom management using technology will have to focus on the critical part of preparation for both teachers and students.

Recommendations

Given that instructional technology in public and private institutions requires ongoing capital outlay, and both public and private institutions have limited funds for this, other innovative and more practical approaches need to be found as coping mechanisms to address the immediate impact of the need for teachers' use of technology in the classes. One such recommendation is to improve teacher-student interaction for learning the use of the technology. Some further recommendations are:

1. Teacher Educators should work together with teachers at all levels to work out plans of action for delivery of methods using PowerPoint.
2. Elementary and secondary teachers must seek to equip themselves with the relevant continued training that would give them additional techniques and skills for using PowerPoint in the classroom.

3. Future research should be conducted to incorporate students from other disciplines to ascertain the effects of using PowerPoint in their classes.

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Appendix A

Letter of Permission

Dear Sir/Madam,

As a requirement to complete my Master of Education Degree with specialization in technology in education, I am expected to complete a research study.

I am kindly asking you to grant permission for me to conduct my research study entitled,

"**PowerPoint use in undergraduate teacher education classes: Perspectives of Elementary and Secondary pre-service teachers.**"

The information received from this study will be used solely for the purpose of the research and will remain strictly confidential.

Thank you.

Sincerely,

Donna Faith Nelson

Appendix B

Letter to Participants

Dear Sir/Madam,

My name is Donna Nelson, and I am in the Master's, thesis-based program, in the Technology in Education area. I am pursuing the study of student's perceptions of PowerPoint as a pedagogical tool for my thesis. The title of my study is "PowerPoint use in undergraduate teacher education classes: Perspectives of Elementary and Secondary pre-service teachers". My thesis supervisor is Dr. George Buck, of Educational Psychology. The purpose of my study is to find out how you (pre-service Elementary and Secondary Education students) view PowerPoint as a pedagogical tool, and how it compares to more traditional approaches of instruction.

To gather this information, I am hoping to have 50 Elementary and Secondary Education students complete a brief survey about their experiences with PowerPoint. The survey should not take more than 15 minutes to complete. Your name will not appear in my thesis, and you will be anonymous. The data gathered will be analyzed and used in my Master's thesis. I am hoping to add to our understanding of the effects and use of computer and communication technology by finding out about your experiences with and impressions of PowerPoint as an instructional approach.

The questionnaire consists of 13 questions. Questions 11 and 12 will ask you to tell of any problems you believed occurred when PowerPoint is used in your

class. Question 13 will ask you if you know of any other approach or technology that could be better suited to your class than PowerPoint. On the questionnaire, you will have 5 options to choose from. The options are strongly agree, agree, not sure, disagree, strongly disagree. Please put a check mark for the answer you choose. The last 3 questions, please write your response on the blank line.

Please note that you are not compelled to take part in this survey and you can decide not to take part at any time without any problems. Each one of you will be given a number, so I will not need to know your names. There is no danger involved if you take part in this study. Also, there is no monetary benefit for you to take part, but your answers will help to report on effects of using PowerPoint in lectures.

Your names will not appear on the questionnaire and when you are finished answering all the questions, I will collect all of them and I will lock them in a file cabinet in my thesis supervisor's office. My supervisor and I are the only two persons that will have a key to the cabinet, so your answers will be kept confidential.

In the event that you need to ask me any further questions regarding this study, please feel free to contact me at 780-964-7670 or email me at dfnelson@ualberta.ca. You may also contact my Advisor, Dr. George Buck at 780-492-9275 or email him at George.buck@ualberta.ca.

If you have any concerns about this study, you may contact the Research Ethics Office at 780-492-2615. This office has no direct involvement with this project.

By completing the survey you are indicating your willingness to be part of this research project. Also, if you choose to withdraw after completing the questionnaire, you have two weeks from the date of doing the survey. You can withdraw by contacting me at 780-964-7670 or email me at dfnelson@ualberta.ca. you may also contact my Advisor, Dr. George Buck at 780-492-9275 or email him at George.buck@ualberta.ca.

Sincerely,

Donna Faith Nelson

Appendix C

Questionnaire

Instructions: For questions 1 - 10, place a tick [ ] in the column which best reflects your view.
The choices are: 1.Strongly disagree 2. Disagree 3. Not sure 4. Agree 5. Strongly agree

	Reflection of views	1	2	3	4	5
1	I enjoy classes taught where information is presented on a traditional chalkboard, whiteboard, or by overhead projector.					
2	I enjoy classes taught using PowerPoint presentations as part of the lecture.					
3	I enjoy classes taught using PowerPoint presentations only					
4	I find that classes taught using PowerPoint presentations are more engaging and interesting					
5	I believe that I learn more effectively when PowerPoint is used as part of lectures					
6	PowerPoint presentations help to make the structure of the lectures clearer					
7	I am more attentive when PowerPoint presentations are used as part of lectures					
8	PowerPoint slides help me to better prepare my course assignments and study for exams.					
9	PowerPoint slides greatly assist my note-taking.					
10	I am overwhelmed with too much information when PowerPoint is used in lectures					

For questions <u>11 – 13,</u> please provide a brief written response in the space provided, or on the back of this survey.

11. Would you like to see or not see PowerPoint presentations continue to be used as part of lectures in the duration of your course? Please give a brief answer.

_____
_____
_____
_____
_____

12. Do you face any challenges with the use of PowerPoint in your classroom learning? Please give a brief answer.

_____
_____
_____
_____
_____

13. Is there an approach or technology that you know of that would be better suited to this class than PowerPoint? Please give a brief answer.

_____
_____
_____
_____
_____

Thank you

Appendix D

Statistics

Correlations

I am more attentive when PowerPoint presentations are used as part of lectures.	I find that classes taught using PowerPoint presentations are more engaging and interesting.	
Pearson Correlation	1	.723**
Sig. (2-tailed)		.000
N	29	29

**. Correlation is significant at the 0.01 level (2-tailed).

Correlations

PowerPoint slides greatly assist my note-taking.	I find that classes taught using PowerPoint presentations are more engaging and interesting.	
Pearson Correlation	1	.531**
Sig. (2-tailed)		.003
N	29	29

**. Correlation is significant at the 0.01 level (2-tailed).

Correlations

PowerPoint slides greatly assist my note-taking.	PowerPoint presentations help to make the structure of the lectures clearer.	
Pearson Correlation	1	.429*
Sig. (2-tailed)		.020
N	29	29

*. Correlation is significant at the 0.05 level (2-tailed).

Correlations

PowerPoint slides greatly assist my note-taking.	I am more attentive when PowerPoint presentations are used as part of lectures.	
Pearson Correlation	1	.607**
Sig. (2-tailed)		.000
N	29	29

**. Correlation is significant at the 0.01 level (2-tailed).

Correlations

PowerPoint slides greatly assist my note-taking.	PowerPoint slides help me to better prepare my course assignments and study for exams.	
Pearson Correlation	1	.453*
Sig. (2-tailed)		.014
N	29	29

*. Correlation is significant at the 0.05 level (2-tailed).

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	T	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
PowerPoint slides help me to better prepare my course assignments and study for exams.	Equal variances assumed	.	.	2.828	6	.030	1.14286	.40406	.15416	2.13156
	Equal variances not assumed			.	.	.	1.14286	.	.	.
I am overwhelmed with too much information when PowerPoint is used in lectures.	Equal variances assumed	.	.	2.465	6	.049	1.28571	.52164	.00931	2.56212
	Equal variances not assumed			.	.	.	1.28571	.	.	.

Group Statistics

	NUMBER OF YEARS IN UNIVERSITY PROGRAM	N	Mean	Std. Deviation	Std. Error Mean
PowerPoint slides help me to better prepare my course assignments and study for exams.	1 YR	1	3.0000	.	.
	3 YRS	7	1.8571	.37796	.14286
I am overwhelmed with too much information when PowerPoint is used in lectures.	1 YR	1	5.0000	.	.
	3 YRS	7	3.7143	.48795	.18443