

ANALYSIS OF ENGINEERING AND EDUCATION STUDENTS' VIEWS AND EXPECTATIONS IN POWERPOINT MEDIATED INSTRUCTION

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Abstract

The study analyzed students' views and their expectation of how PowerPoint should be deployed for instruction. The participants of the study comprises of 300 students from higher institution of learning. A survey questionnaire was administered to gather the data of the study. Prior to the administration of the instrument, a pilot test was conducted to ascertain the reliability and validity of the research instrument. To validate the instrument, a factor analysis was computed and a three (3) factor was extracted. The reliability of each of the three factors was computed, and a coefficient of .82, .72, and .69 Cronbach alpha was obtained. The findings of the study showed that there is no significant different between education and engineering student views and expectation on how PowerPoint should be use for their instruction. Similarly, male and female participants of the study did not differ in their views and expectation on how their instructors should deploy PowerPoint for instruction. The study recommends among other the need for taking into consideration student views on style of using PowerPoint for learning.

Keywords: Student experience, expectation, PowerPoint mediated instruction

Introduction

The use of micro-soft PowerPoint for presentation has become a predominant feature in the contemporary classroom teaching. The deployment of it has been considered as the most significant development in the use of Information technology for practical pedagogical practice (Oh & Gwidka, 2011).

The projection of textual and visual material through PPP and its effects on student learning explain why more emphasizes are place on the need to use the technology to teach the present generation of students. In addition, the need to bring novelty, quality and the best practice into the art of teaching as well as improving instructional strategies in form teachers decision to deployed PP to aid dissemination of instruction. While it is obvious that the content as well as the medium of instruction is important, McLuhan (1964) in Oh and Gwidka (2011) was of the opinion that the medium is the message carrier, therefore, the medium is more important. Contrary to this, Clark (1994) looking at both content and the medium from educational perspective concluded that the content is more important. Despite this contention,

both content and the medium are equally important to the recipient of the information in the modern classroom.

In fact, the importance of PPP cannot be over emphasise because of the structure and organization that is inherent in it features (Susskind, 2007). Yet, concern has been raised as to the fragmentation with which information and knowledge are presented with PP. The amount of information that can be presented in one slide which in most cases reduce the quality of information presented, the homogeneity of bullet point which led to distortion of hierarchical and critical conceptual relationship between idea; the tendency of monologue rather than dialogue which promote teacher centered than student centered form of teaching; it also encourage lazy student to rely on PP slide hand-out for examination (Martin & Amores, 2013; Gier & Kreiner, 2009; Khoo, Hight, Cowie, Torrens & Ferrarelli, 2014).

The aforementioned are the issues being raised which are fundamental to the importance of PP in teaching and learning process. As a result, studies are being conducted to explore the benefit of PP when it is understood that the software was not originally develop for teaching purpose (Alley & Neeley, 2005; Szabo & Hasting, 2000). Since the software have become part of the teaching tool in the contemporary classroom, the need to understand how to make effective use of it becomes imperative. Therefore, this study explores student experience and expectation in a power-point presentation classroom.

Literature Review

There are many divergent views on the effectiveness of PowerPoint for instructional activities at all levels of education. While some argued that students' learning might be adversely affected by this mode of delivery, some said, it is the most appropriate software package for instruction delivery. Cripsen (2004) opined that elaborate PowerPoint presentation may lower student's academic achievement. Murphy (2004) catalogue some of the disadvantage of PowerPoint use which inadvertently reduced its usefulness and make it inappropriate for education: it can foreshortening evidence and thought; low spatial resolution; a deeply hierarchical single path structure as the model for organizing every type of content. Breaking up narrative and data into slides and minimal fragment; rapid temporal sequencing of thin information rather than focused spatial analysis, conspicuous decoration that is irrelevant to the content. In a related study conducted by Simpson, Pollacia, Speers, Willis, and Tarver (2005), the researchers carry out a study to determine student's attitude toward the use of PowerPoint as a tool for instructional delivery. The findings of that study revealed that majority of the students have positive opinion toward PowerPoint use as an instructional delivery tool. Yet, some student felt that PowerPoint is distractive to them, the distraction involve technical problem, equipment failure and some time corruption of computer file where the content for presentation is save.

Laurie (2007) opined that PowerPoint presentation cannot be use to teach the highest level of domain of thinking as presented in bloom six levels of cognitive domain.

The six levels start from the simple recall or recognition of fact, as the lowest level, through increasingly more complex and abstract mental level, to the highest order which is classified as evaluation. This educator sum up his observation that technology integration which many teachers define as the use of PowerPoint in instruction can only effect learning to take place at the lowest rug of thinking, which is understanding and knowledge levels. In a study conducted by Davies, Lavin, Korte, (2009), on technology use for classroom instruction, the result suggested that technology use in the classroom has a positive impact. Albeit it may not necessarily be appropriate for all classroom situations and all subject matter. However, Loisel and Galsen (2004) study the use of powerpoint in 314I classroom, findings from the study

revealed that students indicated to enjoy PowerPoint presentation and that they believe it is effective. Though, majority opted for information to be presented in a different medium. Moreover, out of the three media option in Loisel and Galsen survey, PowerPoint continued to be the most preferred medium of instruction. In a study on technology integration conducted by Davies et al (2009), the study reported that technology was employ to enable the teachers to summarize important points and to make effective use of class time. The finding from Davies et al shows that technology integration in the classroom is teacher centre, and that students are more attentive in a classroom where technology is use as a medium of instruction; it improve the quality of their note taking: the study also revealed that the use of technology would enable the instructor to cover more material.

In a study on Information Technology use in an undergraduate classroom conducted by Szabo and Hasting (2000), in that study, student opinion were sought after receiving all their lectures in one module with PowerPoint. The grades of one set of students were compared with the grade of another set of students that took their own module one year earlier. No significant differences were found in the two group's performance. In another study, students received a mock test one week with overhead lecture, second week with a PowerPoint lecture and third week with PowerPoint with lecture notes. There were no significant difference between the two PowerPoint lecture both of which resulted in higher grade than the lecture with overhead transparence. What this result potent was that the effectiveness of PowerPoint may be case specific rather than universal. On the advantage of PowerPoint use in lecturing, Harknet and Cobane (1997) provide descriptive account of the benefit of it usage. 80% of the participant in the study felt that PowerPoint lectures assisted them greatly in their learning. Some of them felt that the visual emphasis in the PowerPoint helped them in recalling some of what they learn at the time of examination. However, apart from the students' positive attitude toward this method of lecturing, no other significant benefits of PowerPoint were disclosed. Harknet and Cobane suggests that PowerPoint slides are easy to update and that they can provide excellent opportunity for creating electronic handouts. However, the findings from the study cannot be generalized because it is not clear how many students were samples and how many PowerPoint lecture were presented to them. Nicholson (2002) study on student perspective on lecture deliver using MS PowerPoint reported that students were of the opinion that PowerPoint is used less in some discipline than the other. In the summary of that study there was general agreement among students that PowerPoint presentations add clarity to the content of their lectures. The students also agreed that the use of image, color, animation and layering are particularly helpful. From the literature review it is evidently clear that PowerPoint on itself as a tool cannot improve student learning, it is the way that instructor use it that can encourage student learning.

Statement of the problem

Paradigm shift in teaching and learning function at all levels of education has greatly influence the way educators, and faculty members implement the actual practice of teaching. Microsoft PowerPoint lecture method has replaced all other form of teaching in the traditional classroom. Faculty members are on their toe to use this medium for instructional delivery. A lot of argument has been generated on the pros and cons of it usage. Some argue that it can increase the effectiveness of classroom lectures; that it lends greater clarity to lecture and making it easier to follow (Sammons, 1997; Rossen et al, 1997; Nicholson, 2002). Some researchers also stated that it is teachers centered. This make it inappropriate tool in teaching especially when educators clamor for a method that should be student centered. Despite all this findings there appears to be few studies that focus on student feedback base on the

experiences and views on how the student would want their instructor to use PowerPoint. This study therefore aims at understanding students perspective on the use of PowerPoint in order to gain insight into how to improve on it usage and leverage it use for greater productivity for teaching and learning functions.

Objective of the study

- (i) The primary objective of this study is to conduct analysis on student views in term of their experiences when they received lecture with PowerPoint slide.
- (ii) The study also aims at understanding if there is any significant difference between education and engineering students experiences when they received lecture through PowerPoint slide and lastly,
- (iii) To understand if there is any significant different between male and female experiences at PowerPoint lecture class.

Participant of the study

The participants of the study were engineering and education students at University of Ilorin A total of 300 questionnaires were distributed but 288 were found usable. Out of the total participants 159(56%) of them were male, while 129(44%) were female. 225(78%) were undergraduate, while 53(22%) were postgraduate students. The participants of the study were randomly selected for the study.

Methodology

A questionnaire was used for gathering information from the respondents. The instrument used for the study was adapted from O'Dwyer (2008) study on student responses to instruction received through PowerPoint. The instrument was validated before final administration for the present study. The reliability of instrument was ascertained with cronbach alpha and it coefficient was 0.87. The instrument use 5 likert scale with (1 strongly disagree to 5 strongly disagree) for assessing the respondents views. Factor analysis and descriptive statistic such frequency count, mean, standard deviation was use to analyze the items and independent sample t-test were used for analyzing the research questions of the study.

Research Questions

- (i) Is there a significant difference in the mean of education students and engineering student's experiences when they are taught with PowerPoint lecture method?
- (ii) Is there a significant difference in the mean of male and female student experiences when they are taught with PowerPoint lecture method?

Factor Analysis of the result

An explorative factor analysis using principal component extraction method and a varimax rotation of 19 survey items was conducted on a random sample of 288 students to ascertain construct validity of the instrument and extract out the salient item as well as identify the underline dimensions of the data of the study. Prior to running of the analysis with SPSS, the data were screened by examining descriptive statistics on each item. Inter item correlation so as to determine if there is any assumption violation. From this assessment, all the assumption for factor analysis were met. The Kaiser-Meyer-Olkin measure of sampling adequacy was .72, indicating that the present data were suitable for principal component analysis. Similarly, Bartlett's test of sphericity was significant ($p < .001$), indicating sufficient correlation between the variables to proceed with the analysis.

Using the eigenvalues that is greater than 1.0, a three-factor solution provided the clearest extraction and the factor accounted for 50% of the total variance. The first factor has eigenvalues of 5.16 accounted for 27.14%, the second factor has eigenvalues of 2.17 accounted for 14.45%, and the third factor has eigenvalues 1.65 accounted for 8.66%. The first factor had eight items with a reliability coefficient of 0.82; the second and third factor had three items each with coefficient of 0.79 and 0.68 (see table 1 below).

Table 1: Perceived potential of PowerPoint

	Factor Loading	Mean	STD
I find that PowerPoint based lectures method emphasize the important points	.867	3.79	0.967
I found PowerPoint based lectures to be more attention Capturing	.701	3.85	1.042
I find that PowerPoint based lectures enable the lecturer to Stays more focused on the lectured material	.698	3.34	1.093
With PowerPoint based lectures I find that my notes are more organized	.644	3.52	1.075
I found that PowerPoint based lectures are more easier to follow	.611	3.45	1.165
I find that PowerPoint based lectures enable me to maintain my interest for a longer time during lecture	.608	3.26	1.096
I find that PowerPoint based lectures are better structured and prepared	.573	3.72	0.893
I find that PowerPoint based lectures enable me to maintain my focus in the lecture	.549	3.47	0.959
The reliability co-efficient of the component is .822			
Subjective norm on PowerPoint use			
I gain more knowledge when exposed to PowerPoint based lecture than traditional method	.772	3.23	1.124
I like PowerPoint based lectures than traditional method of teaching or other methods of teaching	.736	3.28	1.167
I feel bad when I miss any lecture that involve PowerPoint usage, compared to lectures where blackboard or other medium is used	.723	2.89	1.235
The reliability co-efficient of the component is .796			
Shortcoming of PowerPoint use			
I find that PowerPoint based lectures mean that there is less motivation for me to attend the lecture	.823	2.69	1.109
I find that PowerPoint based lectures notes is harder to Understand	.677	2.73	1.108
I find that PowerPoint based lectures mean that taking notes is harder	.655	2.75	1.083
The reliability co-efficient of the component is .682			

Descriptive analysis

The findings in Table 1 revealed that majority of the students 136 representing (47.2%) agree that they found PowerPoint lecture method to be an attention capturing tool. 78(27.1%) of the total respondent strongly agree with this position as well, while 14(4.4%) strongly disagree. The item has a mean of 3.85(SD=1.04). The finding also show that PowerPoint can

be use to emphasized important point better, with more than halve of the respondent 164(56.9%) agree to this item. 54(18.8%) choose to strongly agree, 43(14.9%) were unsure, while 15(5.2%) strongly disagree with the statement. The mean of this item is 3.79 (SD=.97). The finding also show that PowerPoint are better structured and prepared in teaching, with majority of the respondents 128(44.4%) agree with the statement, 54(18.8%) strongly agree, 77(26.7%) indicated to be unsure and only 1(0.3%) respondent indicated to strongly disagree with the statement. The mean and standard deviation of the item is 3.72(SD=.893). On item that stated that i found my note more organized in PowerPoint lecture classroom, majority of the respondents 124(43.1%) agree with this statement, 48(16.7%) strongly agree, 58(20.1%) choose to be unsure, while 46(16.0%) disagree and 12(4.2%) strongly disagree with the statement. The item has a mean of 3.52(SD=1.08). On item that stated that PowerPoint enable me to maintain my focus in the classroom, majority of the respondents 118(41.0%) indicated to agree, 35(12.5%) choose to strongly agree, 92(31.9%) were unsure, 34(11.8%) disagree, 9(3.1%) indicated to strongly disagree with the statement. The mean and standard deviation of the item is 3.47(SD=.96). The finding on the statement that powerpoint lecture method enable the teacher to use the class time effectively and balance lecture discussion shows that almost halve of the respondent 146(50.7%) were in agreement with the statement. 31(10.8%) choose to strongly agree, 52(18.1%) indicated to be unsure, 43(14.9%) indicated to disagree and 16(5.6%) choose to strongly disagree. The mean and standard deviation of the item is 3.46(SD=1.05). The item that states that PowerPoint are easier to follow revealed that 129(44.8%) of the respondents choose to agree, 45(15.6%) indicated to strongly agree, 52(18.1%) indicated to be unsure, 36(12.5%) choose to disagree and 26(9.0%) indicated to strongly disagree with the statement. The mean and standard deviation of the item is 3.45(SD=1.17). The item that state that I enjoyed class more whenever powerpoint is used as a medium of instruction revealed that 116(40.3%) of the respondents choose to concord with the statement, 25(8.7%) indicated to strongly agree, 104(36.1%) indicated to be unsure, 35(12.2%) indicated to disagree and 8(2.8%) indicated to strongly disagree with the statement. The mean and standard deviation of the item is 3.39(SD=.91). The item that state that powerpoint are visually less clear revealed that respondent 101(35.1%) indicated to disagree, 78(25.7%) indicated to be unsure, 52(18.8%) choose to agree and 48(16.7%) choose to strongly disagree with the statement. The item mean and its standard deviation is 2.59(SD=1.10).

Table 2, Student experiences after exposure to PowerPoint lecture method

		SD	D	U	A	SA
I found PowerPoint based lectures to be more attention Capturing	N	14	18	42	136	78
	%	4.4	6.2	14.6	47.2	27.1
I found that PowerPoint based lectures are less interesting	N	60	82	70	55	21
	%	20.8	28.5	24.3	19.1	7.3
I found that PowerPoint based lectures are more easier to follow	N	26	36	52	129	45
	%	9.0	12.5	18.1	44.8	15.6
I find that PowerPoint based lectures are visually less clear	N	48	101	74	52	13
	%	16.7	35.1	25.7	18.1	4.5
I find that PowerPoint based lectures method emphasize the important points	N	15	12	43	164	54
	%	5.2	4.2	14.9	56.9	18.8

I find that PowerPoint based lectures mean that taking notes is harder	N	40	78	101	53	16
	%	13.9	27.1	35.1	18.4	5.6
I find that PowerPoint based lectures enable me to maintain my focus in the lecture	N	9	34	92	118	35
	%	3.1	11.8	31.9	41.0	12.2
I find that PowerPoint based lectures enable me to maintain my interest for a longer time during lecture	N	16	61	80	95	36
	%	5.6	21.2	27.8	33.0	12.5
I find that PowerPoint based lectures mean that there is less motivation for me to attend the lecture	N	51	71	93	62	11
	%	17.7	24.7	32.3	21.5	3.8
I find that PowerPoint based lectures are better structured and prepared	N	1	28	77	128	54
	%	0.3	9.7	26.7	44.4	18.8
I find that PowerPoint based lectures enable the lecturer to Stays more focused on the lectured material	N	25	33	80	119	31
	%	8.7	11.5	27.8	41.3	10.8
I find that PowerPoint based lectures notes is harder to Understand	N	42	86	80	67	13
	%	14.6	29.9	27.8	23.3	4.5
I find that PowerPoint based lectures enable the lecturer to better use the class time to balance lecture and discussion (or problem solving)	N	16	43	52	146	31
	%	5.6	14.9	18.1	50.7	10.8
I find that I use a textbook less when the lecturer deliver lecture with PowerPoint slide	N	30	53	56	107	42
	%	10.4	18.4	19.4	37.2	14.6
I feel bad when I miss any lecture that involve PowerPoint usage, compared to lectures where blackboard or other medium is used	N	55	45	87	76	25
	%	19.1	15.6	30.2	26.4	8.7
I find out that I enjoy class more whenever PowerPoint is used	N	8	35	104	116	25
	%	2.8	12.2	36.1	40.3	8.7
With powerpoint based lectures I find that my notes are more organized	N	12	46	58	124	48
	%	4.2	16.0	20.1	43.1	16.7
I like powerpoint based lectures than traditional method of teaching or other methods of teaching	N	28	45	69	109	37
	%	9.7	15.6	24.0	37.8	12.8
I gain more knowledge when exposed to powerpoint based lecture than traditional method	N	24	55	69	111	29
	%	8.3	19.	24.	38.	10.1

SD=Strongly agree, D=Disagree, U= Unsure, A=Agree, SA=Strongly agree,

Analysis of Research Questions

Analysis of mean of students' experiences on lecture received via PowerPoint

	gender	N	Mean	Std. Deviation	Std. Error Mean
Experience	male	159	60.4403	8.99057	.71300
	female	129	62.4729	8.33018	.73343

t-test for equal of mean of male and female experiences on lecture received via PowerPoint

	F	Sig	t	df	Sig (2tail)	Mean Difference	Std error diff	95% confidence	
								Lower	upper
Equal variance assumed					.050	-2.03262	1.03106	-4.062	-.032
	2.71	.100	-	286					
Equal variance not assumed					.048	-2.03262	1.02288	-4.046	-.191

An independent sample t-test was conducted to compare students experience at PowerPoint lectured method classroom among male and female. The finding shows that there was no significant difference in responses of male and female. The mean and standard deviation for male is M(60.44), SD(8.99) and the mean and standard deviation for female group is M(62.47), SD(8.33). The mean difference is -2.033, 95% Confidence interval: -4.06 to -.003.

Analysis of mean of education and engineering students' experiences on lecture received via PowerPoint

	Specialization	N	Mean	Std. Deviation	Std. Error Mean
Experience	Education	120	62.6333	7.97889	.72837
	Engineering	168	60.4345	9.16688	.70724

t-test for equal of mean between education and engineering student experiences in a PowerPoint lecture class

	F	Sig	t	df	Sig (2tail)	Mean Difference	Std error	95% confidence	
								Lower	upper
Equal variance assumed	.756	.385	2.116	286	.035	2.19881	1.03893	.15389	4.24373
Equal variance not assumed					.031	2.19881	1.01524	.20018	4.19744

An independent sample t-test was conducted to compare students experience at PowerPoint lectured method classroom among education and engineering students. The finding shows that there was no significant difference in responses of the two groups. The mean and standard deviation for education is M(62.63), SD(7.98) and the mean and standard deviation for

engineering group is $M(60.43)$, $SD(9.16)$. The mean difference is 2.198, 95% Confidence interval: .153 to 4.243.

General Comment from students

The comments of the student have revealed that there are mix reactions among student about the effectiveness of PowerPoint as a tool for instructional delivery. The comments listed below shows that some group of students believe that PowerPoint is an effective tool, while some did not and the students gave justification for their views in term of their disaffection with PowerPoint. Below are some of their comments.

- For me I prefer traditional lecture method than PowerPoint because it is easier to understand and more interesting
- If music, video, chart and graph is added to PowerPoint presentation it will arose my interest to pay attention in the class
- PowerPoint is the medium I like most because it is easier to understand during lecture, and it also provide the highlight of the important point that I should pay attention to
- I prefer traditional method than PowerPoint because it encourage the students to write notes in their book
- I prefer traditional method of teaching to PowerPoint use in a topic that required calculation.
- PowerPoint enable me to remain focus to the explanation rather busy jotting down note, because of this I like PowerPoint method for instruction
- PowerPoint enable me to see clearly what our is teaching in respective of where I sit in the class
- The visual element use by our teacher in PowerPoint medium of instruction enable me to understand easily
- To me PowerPoint medium of teaching without thorough explanation of the content is useless
- I prefer traditional lecture method than PowerPoint because it is more personal and it shows the determination and passion that the teacher has for teaching
- In traditional lecture class teacher give more attention to the students but with PowerPoint the teacher pay more attention to the slide than to the student.
- PowerPoint will enable the lecturer to explain something graphically. For example, if we are discussing about human cells, the slide are very useful since the lecturer don't to draw it on the board
- Traditional lecture method will enable the teacher to have direct interaction and discussion with the students. Slide cannot be enough to explain everything, since student have different level of understanding

Discussion

Base on the objective of this study which aims at analyzing the experiences of students on the medium through which the instruction they received is delivered to them, several questions related to the objective of the study were raised through the instrument use for the study. The students were also asked to make personal comments on why they like or dislike PowerPoint lecture class. Base on the data analyzed for the study, three (3) factor were extracted and this appear to be the salient items that measure the student views on their experiences when PowerPoint is utilized as a medium of their instruction. Judging from their responses, it was also observed that both education and engineering students indicated to believe that PowerPoint lecture method always sustain their attention and interest in the class,

they also attest to the fact that the medium of instruction can be used to emphasize important points. The majority of the respondent indicated that they were able to organize their note in a PowerPoint lecture class. The medium enable them to keep their focus during instruction activities. Aside the fact that the medium is easy to follow, they observe that it enable their instructors to organize and better use the period of instruction judiciously and it also enable their teacher to stay more focus on the lecture material. On the responses of the students on how they would like the medium to be used in the class, majority of them indicated that PowerPoint embedded with visual element such as graphic, picture, chart shall be more appealing to them in the class, majority of them also indicated that PowerPoint that has example and oral explanation on key point of the subject matter will facilitate their learning of the topic of instruction. The students indicated that they preferred their instructors to write out all what they will like them to know on the slide, in other word they preferred slide that provide the full text of the lecture material. They also want their instructors to provide a printed copy of the slide to be made available to them. The students indicated that they would like their instructors to upload the PowerPoint slide to institution WebCT or their learning management system (LMS) for them to access.

The implication of the study for educators

This study is another contribution to the best practice in instructional delivery and technology integration in higher education classroom in Nigeria. It is a contribution to the body of knowledge on PowerPoint integration in teaching and learning process. The result of the study has address some disconnect between technology uses as experience by the students and how they would want the tool to be use in their classes. The study has provided a kind of feedback from student which will assist educators to improve their strategy of preparing PowerPoint for instruction. In the light of these findings, instructors are encourage to utilize PowerPoint in an innovative way, through student preferences so as to achieve the best practice in technology integration that can result to quantum improvement in students learning. Educator are therefore encourage to be strategic in implementing teaching function since the medium and the content of instruction are intertwine process that required adequate and equitable planning for the achievement of instructional goal. Lastly, educators are encouraged to vary their use of technology by accommodate students views in their deployment of technology in the class so that all their effort will yield a desire result.

Conclusion

The finding of this study is in exhaustible. More importantly, when it come to what is to be done, to improve classroom instruction. The content of instruction is as important as medium that is use as a vehicle for its delivery. This account for why it is necessary to continue searching and researching, in order to report how classroom instruction can be effectively conducted amidst several tool in the teachers kit that can be employ for classroom instruction. The study is conducted with quantitative method; however a qualitative approach study is also required in order to have an empirical finding of the same study thereby providing various solutions to the problem of PowerPoint usage in traditional classroom.

References

Cripsen, P. (2004). Now that I know PowerPoint how do I use it to teach? Retrived July 20, 2009. <http://fdc.fullerton.edu/cripsen/powerpoint>

Harknett, R. J. & Cobane, C. T. (1997). *Introducing instructional relations*. Political science and politic 30, pp 496-500

Holzi, J. (1997). Twelve tips for effective PowerPoint presentation for the technological challenged. <http://www.sciencedirect.com/science> retrieved July 20, 2009

Laurie, K. (2007) Step away from the PowerPoint. <http://laurieking.edublog.org>
Retrieved July 19, 2009

Loisel, M. & Galsen, R. S. (2004). Use of PowerPoint in the 314I classroom.
<http://www.cwr.utexas.edu/node/151> retrieved july18, 2009

Murphy, T. (2004). Research based methods from using PowerPoint, animation and video for instruction. <http://portal.acm.org/citation.cmf> retrieved July 19, 2009

Nicholson, T. D (2002) Lecture delivery using MS PowerPoint; staff and student perspective at MMU

Noss, R. & Pachler, N. (1999). The challenge of new technologies: Doing old thing in a new way or doing new thing, Understanding the pedagogy and its impact on learning pg 195-211

O'Dwyer, A. (2008). *Response of engineering students to lecture using PowerPoint*. A paper presented at Dublin City University, Ireland during the international symposium for engineering education.

Rossen, S., McGraw, D., Graham, E. & Lee, D. (1997). Enhancing your lecture with presentation software-setting instructional goal retrieved from
<http://www.old.ucla.edu/fnmc/goals.htm>

Sammons, M. C. (1997). Using PowerPoint presentation in writing class. The technology source.
<http://ts.mivu.org/default.asp?show=article&id=519>

Szabo, A. & Hastings, N. (2000). Using IT in the undergraduate classroom: Should we replace the blackboard with PowerPoint. *Computer and Education vol-35 Issue,3 pg 175-187*.