

Analyzing Homemade PowerPoint Game Questions: Testing Proponents Assumptions

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Introduction

Proponents of the homemade PowerPoint game project claim that through the use of homemade PowerPoint games that students can gain a deeper understanding of the content (Rieber, Barbour, Thomas, & Rauscher, 2008). These claims are based upon three beliefs: the act of students building or constructing something, the writing of the game narrative requires students to synthesize information, and the creation of challenging questions or problems by students based on the higher levels of Bloom's taxonomy.

The Problem

While Parker (2004) found that students in the control group performed better and had larger gains than students who constructed a homemade PowerPoint game, there were methodological issues as Parker did not randomize the two groups and the data indicated that the control group was naturally the academically stronger of the two groups. Barbour and his colleagues (Barbour, Kinsella & Rieber, 2007; Barbour, Kinsella & Toker, 2009) examined the performance of students in a social studies course delivered by a mid-western high school and found there to be no statistically significant differences in the students' scores on portions of the exam where they did create homemade PowerPoint games and portions of the exam where they did not create games. Finally, Clesson, Adams and Barbour (2007) found no statistically significant differences in student performance in their study of the effectiveness of homemade PowerPoint games with a high school English language arts class.

The Study

We speculate one of the reasons for the lack of supporting evidence for students gaining a deeper understanding of the content is due to the fact that the questions they write for their PowerPoint games were not from the higher levels of Bloom's taxonomy. This study was designed to examine homemade PowerPoint games to determine the levels of Bloom's taxonomy represented by the questions written by the students in one of these projects.

Methodology

Using the games created from the Barbour, Kinsella and Rieber (2007) and Barbour, Kinsella and Toker (2009) studies, the researchers began coding the game questions based on the levels of Bloom's taxonomy. We started having all six researchers code, and then compare and discuss a single PowerPoint game to ensure consistency in our individual coding. Individuals, working independently, coded each question in all 64 games based upon the level of Bloom's taxonomy they felt the question addressed. This meant that each researcher coded questions from 21 games and that two different researchers coded each question from every game.

Results

1885 individual questions from 64 homemade PowerPoint games were coded by two researchers with an inter-rater reliability of 96.5%.

Taxonomic Analysis of PPT Game Questions

Bloom's Category	# of questions coded	% of questions
6 – Evaluation	0	-
5 – Synthesis	0	-
4 – Analysis	0	-
3 – Application	6	0.1
2 – Comprehension	233	6.2
1 – Knowledge	3543	93.7

Knowledge Level

Who was the cold war between?
A) The United States and England
B) The United States and Cuba
C) The United States and The Soviet Union
D) The United States and The Netherlands

Application Level

Read and interpret, then answer the question.

SECTION 2. JUDICIAL DISTRICTS The State is divided into five Judicial Districts for the selection of Supreme and Appellate Court Judges. The First Judicial District consists of Cook County. The remainder of the State shall be divided by law into four Judicial Districts of substantially equal population, each of which shall be compact and composed of contiguous counties. (Source: Illinois Constitution.)

SECTION 3. SUPREME COURT - ORGANIZATION The Supreme Court shall consist of seven Judges. Three shall be selected from the First Judicial District and one from each of the other Judicial Districts.

How many judges in the Illinois Supreme Court are from the district that Mclean County is in?

- A) 3
- B) 1
- C) 7
- D) 4

Conclusions

Based on the games created during this two year project, one tenth of 1% of the questions were focused on Bloom's application level – and there were no questions from Bloom's three highest levels. When the purpose of an instructional activity is to promote deeper understanding through the creation of higher-order questions, these results demonstrated that the current activity was not successful in generating these higher levels of thinking.

Clearly more work needs to be done to ensure teachers are prepared to implement homemade PowerPoint games. Proponents have created support material for teachers and students to overcome the technical hurdles to the construction of these games. Nevertheless, more efforts need to be focused upon providing the necessary materials to assist teachers in training their students on how to construct truly higher order questions. Only when students are able to undertake all three of the assumptions made by proponents will they be able to realize that potential.

Literature cited

- Barbour, M. K., Kinsella, J. & Rieber, L. P. (2007). PowerPoint games in a secondary laptop environment. *Proceedings of the World Conference on E-Learning in Corporate, Government, Healthcare and Higher Education* (2328-2332). Norfolk, VA: AACE.
- Barbour, M. K., Kinsella, J., & Toker, S. (2009). PowerPoint games in a secondary laptop environment. *Proceedings of the Annual Conference of the Society for Information Technology and Teacher Education* (1373-1380). Norfolk, VA: AACE.
- Clesson, K., Adams, M. & Barbour, M. K. (2007, October). *Game design as an educational pedagogy*. Paper presented at the annual National Association of Laboratory Schools Symposium, Johnson City, TN.
- Parker, J. S. (2004). Evaluating the impact of project based learning by using student created PowerPoint games in the seventh grade language arts classroom. *Instructional Technology Monographs*, 1(1). Retrieved December 8, 2004 from <http://projects.coe.uga.edu/itm/archives/fall2004/JPARKER.HTM>
- Rieber, L. P., Barbour, M. K., Thomas, G. B. & Rauscher, D. (2008). Learning by designing games: Homemade PowerPoint games. In C. T. Miller (Ed.), *Games: Their purpose and potential in education* (pp. 23-42). New York: Springer Publishing.

For further information

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