Higher Level Questioning and its Affect on Critical Thinking Skills

Research Proposal

Kimberly Holaday

Michigan State University

Introduction

The incorporation of higher level questioning in the classroom has been an area that has been encouraged and come to be required in many schools over the past few years. In effort to ensure that students are truly learning and acquiring content to the fullest, it is thought that students need to use critical thinking skills. This is achieved through the use of higher level questioning by the teacher and students in the classroom. This is also an area in which most teachers wish to be able to perform in order to increase the rigor of their teaching. It enables students to think at a different level, which may result in more thoughtful and meaningful comprehension of content.

Statement of Problem

The purpose of this study will be to investigate if the use of higher level questioning affects a student's ability to think critically. Higher-level questioning involves creating different levels of questions in the classroom. Bloom's taxonomy establishes these levels as remember, understand, analyze, evaluate, and create (Clark, 1999). Critical thinking, "a widely used term that includes skills in applying, analyzing, synthesizing, and evaluating information and the disposition to apply these skills" (Halpern, 1993, p. 270).

Overview of Study

In effort to seek out if teaching a specific class of students with higher level questioning would affect their ability to think critically, several different strategies will be implemented in a classroom over the course of ten school days. Two classes that are similar in their class averages will be used, one as the control group, and the second as the experimental group. The first day they will both be given a posttest based upon information they had just learned, and then over a

length of ten days, the control group will be taught normally and the experimental group will be taught with use of higher level questioning. At the end, they will be given another posttest to measure their ability to think critically.

Review of Related Literature

Prior research studies on higher level questioning affecting critical thinking skills are widely available. To really make this research study a success, it is necessary to first find articles that pertained to defining both higher level questioning and critical thinking. One particular article that will be relied heavily on is "Bloom's taxonomy of learning domains". This source helps one create different levels of questioning in the classroom. The revised version of Bloom's, which was created in the 1990s, "included changing the names in the six categories from noun to verb form and slightly rearranging them" (Clark, 1999, p. 7). The new taxonomy reflects a more active form of thinking, due to the use of verbs, and is perhaps a bit more accurate. At the bottom of the taxonomy, students are required to remember and understand, while the upper levels entail students to analyze, evaluate, and create. Bloom's taxonomy helps to define the word higher level questioning. Next is defining critical thinking. This is accomplished through the finding of an article entitled "Assessing the effectiveness of critical thinking instruction" from The Journal of General Education. The article correlates with Bloom's taxonomy for implementing higher level questioning.

The last few pieces of literature deal primarily with how to assess for critical thinking, as well as how to create different levels of questioning based upon Bloom's Taxonomy. These will be essential for determining the effectiveness of the questioning and thinking. The first article entitled "Eliciting critical thinking skills through questioning" points out the possible results:

"Research has also shown that higher-level questions elicit higher cognitive processes and 80 percent to 85 percent of what students learn by such questioning is retained" (Savage, 1998, p. 291). Using several strategies that were tested and retested by Savage, a research study that is incredibly meaningful and accurate will be able to be implemented. Lastly, the article, "Understanding and testing for "critical thinking" with bloom's taxonomy of educational objectives", states how to write different types of questions based upon Bloom's Taxonomy. It presents sample test items and guidelines for writing test questions for each of the knowledge levels. This source will provide support for composing test questions, but also for enacting higher-level questions daily in the classroom. Overall, most of the pieces focus on the use of different verbs associated with the different levels on Bloom's.

Statement of the Hypothesis

The use of higher level questioning in the classroom will have a dramatic affect on a student's ability to think critically; higher level questioning fosters critical thinking skills.

Method

In order to test whether higher-level questioning affects critical thinking skills, first what will need to be established are the independent and dependent variables; this will be an experimental study. The independent or manipulated variable will be the use of higher level questioning. The dependent or responding variable will be critical thinking skills.

Participants

Two different classes that have similar class averages throughout the school year will be selected. The goal throughout the entire project will be to eliminate as many different variables

as possible. In doing this, the results would be more valid and more reliable. Also to be established is which class will be the control group, and which class will be the experimental group. This will be decided by which two classes have groups of students that are very equal in their academic abilities and have the same number of students. They will be chosen based upon like characteristics.

Instrument

The main instrument of use is a series of two posttests of equal length and difficulty. The only thing differing from posttest to posttest is the content. Each posttest will be twelve questions in length, creating and using verbiage for two questions a piece for each level of Bloom's taxonomy. Questions will be graded non-subjectively, while the use of a rubric will be used to present consistently.

Examples of Test Questions:

Bloom's Taxonomy Level One Question: (Remembering)

> *"What are the two main types of floods?"*

Bloom's Taxonomy Level Three Question: (Applying)

> *"What is an example of a decomposer that lives in the soil?"*

Bloom's Taxonomy Level Five Question: (Evaluating)

> *"Of the natural disasters discussed, which one is the deadliest and why? Include in your answer how it effects populations, habitats, and food/ water availability."*

Procedure

Day One: Both groups will be given a posttest on material that they had learned the previous two weeks. This test will contain exactly twelve questions; two questions a piece from the six different levels on Bloom's Taxonomy. All questions will be short answer questions and will be graded by use of rubric to determine the extent of correctness. Day Two through Nine: For the next eight days, the experimental group will be taught through use of higher level questioning. This will be accomplished by using several different strategies. Upon entering class, students in the experimental group have always been required to complete a daily PASS (Palmetto Assessment of State Standards) Warm Up question. Usually, these questions are multiple choice, with the majority of them coming from the lowest levels of Blooms. To implement higher level questioning, newly created daily PASS Warm Up questions that use verbiage from the higher levels of Blooms will be implemented. Another tactic will be to create a daily "script" for the experimental group. Each day before teaching, a set of twelve questions, two apiece from each level on Bloom's Taxonomy, will be created. This "script" will ensure that all twelve questions are being asked and guarantees that the teacher will use higher level questioning. The above-mentioned strategies will not be put into effect for the control group. Their PASS Warm UP questions will still be multiple choice and basic recall, and come from the lower two levels on Bloom's Taxonomy. Additionally, a "script" will not be created and a majority of the questions asked each day in the control group will also be considered basic recall. Day Ten: On the final day, students will be given a second posttest. This posttest will be just like the first. It will be comprised of twelve questions; two questions a piece from each level on Bloom's Taxonomy. All questions will be short answered, and will be graded as stated above from Day One. The only thing that will differ from posttest one to posttest two will be the content. Students will be tested over what they learned in class from day two through day nine.

Internal and External Validity

The ways in which this research study has been created and possibly implemented, there should not be any threats to internal validity. Since the number of variables is small, and the sample size will be appropriately chose, threats to internal validity should be minimal. If the results match the hypothesis, there should not be any alternative explanations as to the findings. If so, they are merely coincidental or random.

There also should not be any threats to external validity. If conducted in an appropriate manner, results should be generalizable, especially for samples of like size and nature. This goes for different subjects, schools, curriculum, etc.

Data Analysis

Data will be taken from the posttests where questions represent the levels of Bloom's Taxonomy. Results will be organized in chart form, listing each student's percentage grade, and each group's mean, mode, and range. Then a comparison between the two group's results will take place.

Budget

No funding would be necessary to conduct this research study.

Works Cited

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