Does Blogging on a Topic Improve Student Performance on Multiple Choice Exams?

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Essential Question

Students within the Programming and Web Development technical area are constantly being exposed to new material and being asked to put that newly acquired knowledge into practice. Students typically are able to implement the new programming concepts or web design techniques successfully. Oftentimes, students find it necessary to refer back to prior work samples or seek similar problems on the internet before devising their own solutions to assigned problems. Therefore, it has become increasingly obvious that they often fail to retain the knowledge and therefore have difficulty performing well on Summative Assessments (tests and quizzes). In an effort to help students retain the information that they learn, I have decided to have them write about it in the form of blog entries on the subject matter that they are being exposed to. Will the act of blogging on the topics that they are being introduced to help students perform better on Multiple Choice Exams?

Field Site and Participants

Minuteman High School is a regional high school providing career and technical programs for students from sixteen member town districts. In addition, Minuteman does admit students from outside the district. Based upon the last data released (2013-2014 school year) by the Department of Elementary and Secondary Education enrollment at the school is 715 students with 482 of them being male and the remaining 233 female. Economically, 30.5% of the population qualifies for free and reduced lunch. 64.9% of the population is classified as "High Needs" (compared to 17% state-wide), 46.6% are reported as "Students with Disabilities" (compared to 48.8% state-wide) with 5.1% receiving special education services.

The subjects participating in the study are the members of the sophomore Programming and Web Development students. There are 10 members of that class; 9 male and 1 female. Of

the ten, three of them or 30% have Individualized Education Plans. The class will be equally divided into two groups of five students each. The intent is to collect data for two studies simultaneously. One group will serve as the treatment group in while the other serves as a control group. The two groups will reverse rolls in the second study.

Research Design and Rationale

This Quasi-experimental research study will take place in a Programming and Web Development technical area. Students are in their technical area for approximately 6 hours per day for a full week; following a week-on, week-off rotation; attending their academic classes on the alternating weeks. All members of the class will receive the same instruction and other educational experiences in all content areas. The study will require students to create blog entries, twice per week, on the topics being covered in class. The difference between the instructional activities of the two groups will be the content area on which the group focuses their journal/blog entries. The intention is to run two studies simultaneously, utilizing the same students as the test subjects of the concurrent studies.

The tables below represent the assignment of the students with respect to two studies:

Study 1: Control Group Blogs on Web Development, Treatment Group Blogs on Programming

Group	Students Assigned	Group Assignment
A	1-5	Control Group
B	6-10	Treatment Group

Hypothesis

Programming and Web Development students who create blog entries on Programming topics will perform at least 5% better on teacher prepared multiple choice Programming exams than students who blog on Web Development topics.

Null Hypotheses

Programming and Web Development students who create blog entries on Programming topics will not perform 5% better on teacher prepared multiple choice Programming exams than students who blog on Web Development topics.

Study 2: Control Group Blogs on Programming, Treatment Group Blogs on Web Development

Group	Students Assigned	Group Assignment
A	1-5	Treatment Group
B	6-10	Control Group

Hypothesis

Programming and Web Development students who create blog entries on Web Development topics will perform at least 5% better on teacher prepared multiple choice Web Development exams than students who blog on Programming topics.

Null Hypotheses

Programming and Web Development students who create blog entries on Web Development topics will not perform 5% better on teacher prepared multiple choice Web Development exams than students who blog on Programming topics.

Method

As mentioned in the Hypothesis section, students will be blogging/journaling on an assigned topic; either Programming or Web Development. The topic of the entries will be

related to the content area for which they are a member of the treatment group. In this way, each student will simultaneously be a member of the treatment group in one study and the control group in the other.

The approach to be used in carrying this study out will be to provide the same instruction and other learning activities to both the treatment and control groups. Data for two different studies will be collected simultaneously. Since students are in the technical area for an extended period of time, instruction is provided in multiple content areas. Students will be required to make Blog/Journal entries; Blog entries must be in their assigned area. This is the "Treatment."

At the end of each week, or at the conclusion of a topic, all students will be required to take an identical teacher prepared exam consisting of at least 20 multiple choice questions. These exams will be graded and their results analyzed.

Data collection instruments

Performance related data collection instruments that will be employed in this research study will consist of a twenty question examination for each content area. The examination will be administered at the conclusion of instruction in the content area being observed and is intended to measure the knowledge acquired by the students as a result of the learning activities.

Other pertinent data concerning student demographics will be gathered by researching and recording relevant information from the school's student management system and direct reading of Individual Education Plans (IEPs).

Data collection procedure

The data collection procedure that will be utilized in this research study will begin with the scoring and recording of test scores for each student. Once the raw exam scores have been

recorded for each class, they can then be broken down according to subgroups including: sex, special education status, etc. for more detailed analysis.

Data collection analysis

Analysis of the data that is collected during this study will begin with the calculation of the average scores for each of the treatment and control groups. Once these averages have been calculated, direct comparison of the exam averages for the treatment and control groups will be the first level of data analysis. In order to determine if any difference between the mean scores of the treatment and control groups is statistically significant, more intense scrutiny of the data will be carried out in the form of an independent, single-tailed t-test.

Limitations

The quasi-research study described in this document includes certain limitations that should be taken into account. The first consideration is the participant population. This population is not selected at random but is comprised of the members of the sophomore class in the Programming and Web Development technical area. Assignment of the treatment and control groups on the other hand, is totally random. Another considerable limitation is the population size. Considering that there are only 10 students in the class, the participant population may not be large enough to draw any significant conclusions. These limitations may or may not prove to be valid once the study is conducted and the data is analyzed.