

Clinical Internship Action Research Findings

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Design and Rationale

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; they follow 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.

Field Site

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.

Participants

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.

Hypothesis / Null Hypothesis 1

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 any better on teacher prepared multiple choice Programming exams than students who blog on Web Development topics.

Hypothesis / Null Hypothesis 2

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 Programming on topics.

Null Hypotheses.

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

Treatment and Control Group Selection

The students in the sophomore Programming and Web Development technical area will be assigned, at random, to one of two groups.

These two groups will serve as the Treatment and Control Groups for two separate studies.

Study 1 – The control group will blog on a bi-weekly basis on Programming topics presented during instruction. The treatment group will blog on a bi-weekly basis on Web Development topics presented during instruction.

Study 2 – The control group will blog on a bi-weekly basis on Web Development topics presented during instruction. The treatment group will blog on a bi-weekly basis on Programming topics presented during instruction.

Data Collection Instruments

Participants will take two multiple choice exams.

- The topic of Exam 1 will be Programming. Results from this exam will be used to complete the calculations for Study 1.
- The topic of Exam 2 will be Web Development. . Results from this exam will be used to complete the calculations for Study 2.

Data Analysis

The data analysis will be conducted using a Independent, single tailed t-test.

The research being conducted will yield data for two separate sets of data analysis that will be used to test the same basic hypothesis.

Study 1

Treatment Group

Mean: 67 Variance: 220

Control Group

Mean: 62 Variance: 95

Study 2

Treatment Group

Mean: 66.1 Variance: 133.55

Control Group

Mean: 63 Variance: 60.625

Formula for $t_{(\text{calculated})}$

The difference in the means divided by the “standard error”

$$t = \frac{M_1 - M_2}{\sqrt{\frac{S_1^2}{n_1} + \frac{S_2^2}{n_2}}}$$

t (calculated)

Study 1: $t = 0.629941$

Study 2: $t = 497451$

Degrees of Freedom

$$N_1 + N_2 - 2$$

$$5 + 5 - 2 = 8$$

t_(critical)

At 95% confidence level with 8 degrees of freedom:
t (critical) = 1.860

t Table

cum. prob	<i>t</i> _{.50}	<i>t</i> _{.75}	<i>t</i> _{.80}	<i>t</i> _{.85}	<i>t</i> _{.90}	<i>t</i> _{.95}	<i>t</i> _{.975}	<i>t</i> _{.99}	<i>t</i> _{.995}	<i>t</i> _{.999}	<i>t</i> _{.9995}
one-tail	0.50	0.25	0.20	0.15	0.10	0.05	0.025	0.01	0.005	0.001	0.0005
two-tails	1.00	0.50	0.40	0.30	0.20	0.10	0.05	0.02	0.01	0.002	0.001
df											
1	0.000	1.000	1.376	1.963	3.078	6.314	12.71	31.82	63.66	318.31	636.62
2	0.000	0.816	1.061	1.386	1.886	2.920	4.303	6.965	9.925	22.327	31.599
3	0.000	0.765	0.978	1.250	1.638	2.353	3.182	4.541	5.841	10.215	12.924
4	0.000	0.741	0.941	1.190	1.533	2.132	2.776	3.747	4.604	7.173	8.610
5	0.000	0.727	0.920	1.156	1.476	2.015	2.571	3.365	4.032	5.893	6.869
6	0.000	0.718	0.906	1.134	1.440	1.943	2.447	3.143	3.707	5.208	5.959
7	0.000	0.711	0.896	1.119	1.415	1.895	2.365	2.998	3.499	4.785	5.408
8	0.000	0.706	0.889	1.108	1.397	1.860	2.306	2.896	3.355	4.501	5.041
9	0.000	0.703	0.883	1.100	1.383	1.833	2.262	2.821	3.250	4.297	4.781
10	0.000	0.700	0.879	1.093	1.372	1.812	2.228	2.764	3.169	4.144	4.587
11	0.000	0.697	0.876	1.088	1.363	1.796	2.201	2.718	3.106	4.025	4.437
12	0.000	0.695	0.873	1.083	1.356	1.782	2.179	2.681	3.055	3.930	4.318
13	0.000	0.694	0.870	1.079	1.350	1.771	2.160	2.650	3.012	3.852	4.221
14	0.000	0.692	0.868	1.076	1.345	1.761	2.145	2.624	2.977	3.787	4.140
15	0.000	0.691	0.866	1.074	1.341	1.753	2.131	2.602	2.947	3.733	4.073

Comparison of t values

Study 1:

$$\begin{array}{ccc} 0.629941 & < & 1.860 \\ t_{(\text{calculated})} & & t_{(\text{critical})} \end{array}$$

Comparison of t values

Study 2:

$$\begin{array}{ccc} 0.497451 & < & 1.860 \\ t_{(\text{calculated})} & & t_{(\text{critical})} \end{array}$$

Conclusion

Since both Study 1 and Study 2 yield calculated t -values that are less than the critical t -value; we cannot reject the null hypothesis.

Therefore, we are unable to statistically support the hypothesis that blogging on subject matter will lead to an improvement in student scores on multiple choice questions related to those topics.