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Quantitative Article Critique

EDCI 500

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**APA Citation**

Tekerek, M., Yeniterzi, B., & Ercan, O. (2011). Math attitudes of Computer Education and Instructional Technology students. *TOJET: Turkish Online Journal of Educational Technology*, 10(3), 168-174.

**Abstract**

The purpose of this research was to investigate the influences of gender, graduated high school type, grade of high school diploma, YGS-1 score, father’s education, mother’s education, and beginner undergraduate courses on the mathematical attitudes of undergraduate students in Computer Education and Instructional Technology (CEIT) courses. The participants were CEIT undergrads chosen on a voluntary basis from randomly selected universities. The data were collected via a survey known as the “Math Attitude Scale” survey. Students were emailed this survey and responded with answers. The data were analyzed using t-tests and one way ANOVA tests. It was found that specific variables suggested a higher probability of a positive mathematical attitude.

**Critique**

**Research Problem or Purpose**

Though it takes the author several paragraphs of introduction to get to the purpose of the research, it is clearly stated that the purpose is to gauge the attitudes of Computer Education and Instructional Technology (CEIT) undergrads towards mathematics. This research is reasonably delimited so as to be susceptible to investigation. The introduction of the article refers to research that claims “students who have more powerful math knowledge have more probability to be successful at CEIT departments” (p. 169). This finding makes it worthwhile to delve further into the subject of mathematical interest. This research mimics previous research but in a different sample of people. Elementary and secondary students were surveyed for their mathematical interest; this research brings that survey to college students pursuing the above stated field. This research may prove useful due to the increasing amount of study on what influences mathematical success and success in general.

**Review of Literature**

The literature has been reviewed thoroughly. The author references prior research that talks about influences on attitudes towards mathematics, future success of varying attitudes towards mathematics, mathematical attitude of students who have performed with varying success previously in mathematics, and the attitudes of students at varying ages towards mathematics. The literature is only a summary of what is known. The author provides no insight into the validity of the prior research. It is presented much as fact. The literature review does provide evidence that the research is needed. The review suggests poor attitudes toward mathematics leads to poor performance in the field. This research provides preliminary groundwork into further investigating this correlation between attitude and performance. This review establishes a theoretical framework of mathematical attitudes of CEIT undergrads, which is a sufficiently narrow framework to be analyzed with clarity while still providing enough breadth to be useful. The author collects several pieces of research in the review that are linked to the purpose of the author’s research as well as his framework. These articles establish the known understanding of mathematical attitude.

**Hypotheses or Questions**

The author clearly states what the expected outcome is. The author believes that several factors influence attitude towards mathematics. They are “gender, type of graduated high school, grade of high school diploma, YGS-1 score, which they received, their fathers’ education level, their mothers’ education level, grade of Information Technologies in Education I course and lastly grade of Mathematics I course” (p. 169). These factors are well supported by the literature review, with most of these factors having research proving their effect on various sample populations. These hypotheses are testable in that once a student’s attitude is gauged, all of these factors are easily found from student records. The author does not suggest how the factors are expected to affect attitude, whether positively or negatively.

**Methodology**

The design of this research is clearly described so another researcher could easily emulate this experiment. The author describes the surveys and techniques used by name. The colleges and students chosen to participate were a sample chosen at random. Kolmogrov Smirnov tests and homogeneity of variances in ANOVA tests were performed to assure a normal distribution of variables to be studied among the students. The population was found to be normal so parametric tests were conducted. The researchers used a test previously used to test mathematical attitude, the “Math Attitude Scale” test by Duatepe and Çilesiz, that has a reliability coefficient of 0.96. This is satisfactory. The researchers did not perform a pretest or pilot study, but seeing as the survey used has proven reliable before, the survey still appear valid. The only obvious weakness to this research would arguably be the small number of participants involved. I believe for such a simple method of contacting and collecting data, a larger sample could have been used to increase the statistical power of the research.

**Results**

The researchers used the most appropriate statistical techniques to analyze the resultant data. The data were analyzed using t-tests and one-way ANOVA tests. T-tests were used when there were two options for the variable being analyzed, such as mother’s education. ANOVA was used when there were more than three options, such as graduated high school type. The data are clearly presented in tables separated by factor being studied. Results were analyzed for statistical significance, measuring a p < 0.05. No references to practical significance are made.

**Discussion, Implications, Conclusions**

The conclusion of this article was sparse. The researcher recaps the findings in one place with less technical terminology but reveals no new insights. The author points out when the research contradicts what would have been assumed, such as high school students with the lowest grades had the highest appreciation for math. The researcher does not discuss the limitations of the research design. I find this odd since the researchers encounter several differences between their findings and previous findings. The author notes these differences but makes no effort to attempt a conjecture. The author may have omitted extraneous factors unintentionally such as location or willingness to participate in a survey. This may have contributed to the variance in findings between the author and the prior research. Even though a few of the variables that were considered differ from the research, a majority of the findings support the current literature. The author adequately addresses all of the variables set forth to investigate in the hypothesis. Also the author extrapolates from the findings that there is a need for greater awareness of students’ attitudes towards mathematics and that it should be addressed by CEIT curricula to foster analytical thinking. The author ends the article with a call-to-arms for this curricula reform.