

**STestMAP AS AN ALTERNATIVE FOR
SIGNIFICANCE TEST SELECTION**

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ABSTRACT

One major problem faced by many researchers and students when confronted with the hypothesis testing procedure is to select the relevant statistical test for the purpose of calculating the test statistics. This study aims to determine the effectiveness of STestMAP as a tool to help in the selection of the significance test. It also aims at investigating the flexibility afforded by the STestMAP procedure in catering to the needs of both linear and non-linear users. The research design divides the study into two phases: Phase I where quantitative analysis dominates while Phase II involves qualitative analysis. Four instruments, which consisted of prior knowledge test, pre-test, post-test and interview, were adopted and administered. Data collection was carried out through paper-and-pencil tests and interviews. Both quantitative (descriptive and inferential analyses) and qualitative data analysis techniques were utilized. In Malaysia, a random sample of 49 respondents from two public universities in Sarawak, Malaysia was chosen out of which 6 respondents were purposively selected and interviewed. The Wilcoxon Signed Rank Test showed that there was a statistically significant difference in the pre-test and the post-test for the control group, $Z=-3.978$, $p=0.001$ as well as for the experimental group, $Z=-4.275$, $p=0.001$. In comparing the gains between the experimental and the control groups, however, the test indicated insignificant difference in the gain scores, $Z=-0.142$, $p=0.887$. In Singapore, 29 respondents were selected on a voluntary basis from one of the public universities. Eight respondents were purposively selected and interviewed. Paired t-Test showed that there was significant gain in the pre and post-tests ($t=7.678$, $p=0.001$). For both Malaysia and Singapore, a more detailed analysis with programme of study and Cumulative Grade Point Average (CGPA) as independent variables

1.2 Research Objectives

This study aims to explore the effectiveness of STestMAP as an alternative technique in significance test selection. In this study, two different education contexts are used to investigate the effectiveness of STestMAP under different educational background. Both quantitative and qualitative methodologies are used to analyze data from the Malaysian and Singaporean samples.

For the quantitative analysis, the Malaysian sample consisted of 49 respondents from Universiti Malaysia Sarawak (UNIMAS) and Universiti Teknologi Mara (UiTM) Sarawak, Kuching. For qualitative analysis, six respondents were selected and interviewed. However, only three respondents or cases were used for analysis due to technical problems.

For quantitative analysis, the Singaporean sample consisted of 29 respondents from Nanyang Technological University (NTU). For qualitative analysis, eight respondents were selected and interviewed. However, only six respondents or cases were used for analysis due to technical problems.

The objectives of this study are:

1. To compare the mean scores of the respondents using STestMAP with those not using the map.
2. To investigate the influence of two demographic factors like CGPA and programmes of study on the performance of the respondents in a paper-and-pencil test.

3. To investigate the flexibility of the STestMAP procedure in allowing for both linear and non-linear interactions.
4. To study the association between the metacognitive skills and the STestMAP procedure amongst the respondents who subscribed to different interaction patterns.

1.3 Research Questions

This study is carried out to answer the following questions.

1. What is the mean score of the pre-test for the respondents using STestMAP and those not using STestMAP?
2. What is the mean score of the post-test for the respondents using STestMAP and those not using STestMAP?
3. Is there any statistically significant difference between the mean scores of the respondents using STestMAP with the mean scores of those not using STestMAP?
4. Do demographic factors like CGPA and previous programmes of study influence the performance in significance test selection?
5. Do the respondents prefer the non-linear interaction pattern as compared to the linear interaction pattern when using the STestMAP significance test selection procedure among the interviewees?
6. What is the association between the metacognitive skills and the STestMAP procedure amongst the respondents who subscribed to different interaction patterns?