

PAT-M Test With and Without Specific Purpose

Question: Does knowing the specific purpose of the PAT-M test have an impact on the students' test score?

Hypothesis: Knowing the specific purpose of the test makes a positive impact on student's test results.

Method: Students were asked to do the test without telling them the clear purpose of the test although, they were asked to do their best using executive functions skills. They were informed that the test result would be used by the teacher to plan for future teaching. On the completion of the test the result were displayed in the classroom and students were informed that these would be used to calculate their final grade. The students were given an opportunity to re-sit for the test. Test results from both the tests were recorded and analysed using Z-test to see if they significantly differed.

Mathematical Calculations:

PAT-M test score of 27 students without clear purpose:

15,17,15,1,10,15,21,32,19,13,17,12,19,13,26,36,13,10,16,14,15,33,15,8,20,15,10 and 18

Mean: 16.96 and S.D.:7.45

Score with specific purpose:

11,23,12,26,25,24,32,21,15,19,12,15,11,29,38,15,14,14,13,25,29,21,13,27,37,18 and 16

Mean: 20.56 and S.D.: 7.766

Percentage increased: $(51.4 - 42.4)\% = 9\%$

There was 9% increased on the overall score

Test of Significance (Z-test) at 5% level of significance

$$Z = \frac{\bar{X} - \mu}{\frac{\sigma}{\sqrt{n}}}$$
$$Z = \frac{20.56 - 16.96}{\frac{7.45}{\sqrt{27}}} = \frac{3.59}{1.43} = 2.5$$

Since the Z-value is bigger than 1.96, the score with specific purpose is significantly different to the score without specific purpose.

Limitations and Assumptions:

The number of questions right (out of 40) was used as a raw score for the students. It was assumed that asking to try your best using their executive function and the result will be used for future planning was not a specific purpose. Using the result as a part of their assessment for their grade was considered as a specific purpose as most of the students always want to get a good grade. Also, it has been assumed that 27 is a large enough data to produce a reliable result.

The limitation of this research was that not all the student did re-sit for the test. Therefore, only the test scores of 27 students who re-sit for the test was considered as the data to analyse.

Analysis and Discussion:

When analysing the individual scores for both tests, with and without specific purpose, it is evident that 7 out of 27 student's score decreased compared to their first test without specific purpose. The decrease ranged in score from 1 to maximum of 4. This could be because the specific purpose might have put pressure on students to achieve than the first attempt. Only 2 out of 27 students scored the same in both tests. The reason could be because they had used their best ability to answer the questions. Eighteen students' score increased when the purpose was specific. The increase in the score ranged from 1 to 25. It proves that almost 67% of the students had not used their executive function skill while doing the test without specific purpose.

The mean score of the test was increased by 3.6 which is 9%. This shows that having a specific purpose for diagnostics test will encourage students to use their executive function skill and students will perform better compared to tests without specific purpose. The use of Z-test proves the above statement. It was evident that the students' test score significantly improved when the purpose was specific.

Conclusion:

The test scores and the mathematical tool provides evidence that the students perform better in diagnostic test if the purpose is clear and specific to them. This means students choose to use their executive function skill well when they know how the result will be used. When students do use their best effort to do a test this will represent the true ability of the student's level. When the test result truly represent the student's ability, the planning for teaching in classroom will be more appropriate and will meet the students' ability, which may lead to students progress in future.

To conclude, every diagnostic tests like PAT-M and NAPLAN must have a specific purpose to the students. Use of data of this type is not indicative of actual ability of student's.