Maple-assisted accelerated learning to enhance learning interest of senior high school students

W Ediningrum

Pendidikan Guru Sekolah Dasar, STKIP Al Amin Indramayu, Jl. PU Kempted Wirakanan, Kandanghaur, Indramayu, Indonesia

*whyriedine@gmail.com

Abstract This research was motivated by the importance of learning interest of students. Learning interest of students is still low. In order that this problems can be solved, a learning model that can enhance learning interest of students is required. In this research, Maple-Assisted Accelerated Learning was selected. This study aims to analyze the enhancement learning interest of students. This research was a quasi-experimental with pretest-posttest control group design. The population was students at tenth grade in one of senior high schools in Purwokerto, Central Java. The sample consisted of two classes which was selected by purposive sampling. This research used four instruments: learning interest questionnaire, observation sheets, and interview guide. Data analyzed was done quantitatively. The data were analyzed by using Mann-Whitney U Test and Chi Square test. Based on the data analyze, it is found that: (1) the achievement of learning interest ability of students who received the Maple-Assisted Accelerated Learning is better than the achievement of students who received conventional learning; (2) the enhancement of learning interest of students who received the Maple-Assisted Accelerated Learning is better than the enhancement of students who received conventional learning.

1. Introduction

Education is very important for human life that has a purpose for human beings lead to a better life. In order to achieve the goal, the teacher as an educator is required to improve the quality of education, namely the creation of good learning and in accordance with the times and orientation of education. Changes in time and educational orientation require educators to be more creative in managing learning activities. The condition of effective teaching and learning is the existences of interest and attention of students [1]. Interest is a trait that tends to settle on a person. Great interest has a great influence on learning result. Students who have a high learning interest, will pay more attention to the lesson. According to Aritonang [1] interest in learning has a great influence on student learning, students who have high interest in learning will pay more attention to the lesson. One of the learning alternatives today is Accelerated Learning. It is as a way to create learning activities into a fun process. Fun processes in teaching learning is expected to increase learning interest of student.

Accelerated Learning is a more advanced learning approach than currently used. Implementation of Accelerated Learning in the learning process at school can provide several advantages. Meier in his book The Accelerated Learning Handbook writes about learning problems that often occur in the implementation of school learning activities. Meier poses problems that take place in school with terms such as: boring lectures, pour and snore (feeling and sleeping students), joylessness, passive learners, reptilian brain approach (scare or threatening) [2]. These terms are consistent with the author's observations and experiences during teaching in school.

According to Hartono [3] a computer that is a system consisting of software tools, hardware and brainware are experiencing rapid growth, even the computer is mentioned as an early milestone in the digital technology revolution. A computer is a device that can perform counting operations or process data and present the results as information [4]. Computers that were originally just to help solve complicated calculations can now be used for word processing, data, image processing, and databases of various fields of life [5].
Computer-assisted learning is better known as Computer-Assisted Instruction (CAI). According to Yong [6] over two decades CAI evolved from the use of mainframe computers to micro-computers that have provided opportunities to schools and educational institution in implementing computer-assisted learning media. According to Karim [7] reveals that Maple is a valuable tool for visualizing mathematical principles, devising solutions to equations, exploring mathematical ideas and developing mathematical modules. There are several forms of learning interactions that make use of the program including the use of Maple, namely Practice and practice (Drill and Practice), tutorials, tests and information sources [8]. Based on the above problems, the researchers wanted to conduct research related to learning interest by using Maple – Assisted Accelerated Learning towards high school students, so this research took the title "Maple – Assisted Accelerated Learning to Enhance Learning Interest of Senior High School Students”

2. Experimental Method
The method used in this study is the experimental method, since the treatment is given in this study to know the relationship between the treatment with certain aspects that are measured. Experimental research is a genuine study to look at causality [9]. This study is a quasi experiment. In quasi experiments the subject is not randomly grouped but selected according to naturally formed groups. The design that will be used in this research is pretest-posttest design. The basic consideration in choosing this design is because this study aims to determine the difference in the increase in student learning interest with Accelerated Learning assisted Maple software and students who get conventional learning. In this study two classes were taken - each acting as an experimental group and a control group. The experimental group is a group treated with Accelerated Learning with Maple Software, while the control group learns conventional learning. The population in this study is all students of class XI of the SMA Negeri in Purwokerto. The type of instrument that is used to obtain data is non-test instrument. This research used three instruments: learning interest questionnaire, observation sheets, and interview guide.

3. Result and Discussion

3.1 Figure 1 and Figure 2
There are two steps that can be used to solve the limit problem. The steps are as follows:

1. Tools – Load Package – Student Pre Calculus

![Figure 1. Output 1 Software Maple](http://science.conference.upi.edu/proceeding/index.php/ICMScE/issue/view/3 | ICMScE 2018 816)
2. **Tools – Load Package – Student Calculus 1**

![Image of Maple software interface]

Figure 2. Output 2 Software Maple

And the output on the image will come out in the worksheet with the following view:

\[
\lim_{x \to 0} (4x - 6)
\]

\[
\begin{align*}
&= \lim_{x \to 0} 4x + \lim_{x \to 0} (-6) \\
&= \lim_{x \to 0} 4x - 6 \\
&= 4 \lim_{x \to 0} x - 6 \\
&= -6
\end{align*}
\]
Research Results on Interest learning

**Table 1. Description of Students’ Learning Interest**

<table>
<thead>
<tr>
<th>Class</th>
<th>N</th>
<th>Learning Interest Pre Treatment</th>
<th>Learning Interest Post treatment</th>
<th>N-gain</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>( \bar{x} )</td>
<td>%</td>
<td>s</td>
</tr>
<tr>
<td>Experiment</td>
<td>23</td>
<td>67,6</td>
<td>60,35</td>
<td>5,60</td>
</tr>
<tr>
<td>Control</td>
<td>23</td>
<td>71,82</td>
<td>64,12</td>
<td>9,34</td>
</tr>
</tbody>
</table>

The results of research on the learning Interest obtained from the questionnaire given before and after the students get treatment (learning). Calculation of questionnaire data of learning interest before treatment, post treatment questionnaire, and n-gain can be seen in Appendix. From the results of questionnaire data analysis of early learning interest and questionnaire interest in learning end and n-gain obtained description of student interest in learning, as seen in Table 1.

**Table 2. The result of Pre Treatment Questionnaire**

<table>
<thead>
<tr>
<th>Z</th>
<th>Sig.</th>
<th>Conclusion</th>
</tr>
</thead>
<tbody>
<tr>
<td>-1.527</td>
<td>0,064</td>
<td>H(_0) accepted</td>
</tr>
</tbody>
</table>

Summary of the calculation results are presented in Table 2. It can be concluded that there is no significant difference between students who received Maple-Assisted Accelerated Learning and students who received conventional learning.

**Table 3. The result of Post Treatment Questionnaire**

<table>
<thead>
<tr>
<th>Z</th>
<th>Sig.(2-tailed)</th>
<th>Conclusion</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.262</td>
<td>0,001</td>
<td>H(_0) rejected</td>
</tr>
</tbody>
</table>

The summary of the calculation results is presented in Table 3. It can be concluded that the achievement of students who received Maple-Assisted Accelerated Learning is better than those who received conventional learning.

**Table 4. The result of N–gain Learning Interest**

<table>
<thead>
<tr>
<th>Z</th>
<th>Df</th>
<th>Sig.(2-tailed)</th>
<th>Conclusion</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.866</td>
<td>46</td>
<td>0,000</td>
<td>H(_0) rejected</td>
</tr>
</tbody>
</table>

Summary of the calculation results are presented in Table 4. Table 4 Test Result Difference N-gain Rank Interest in Student Learning. It can be concluded that the enhancement in learning interest of students who received Maple-Assisted Accelerated Learning is significantly better than students who received conventional learning.

**4. Conclusion**

Based on the results of the research, obtained some conclusions as follows.

1. The achievement of learning interest ability of students who received the Maple-Assisted Accelerated Learning is better than the achievement of students who received conventional learning.
2. The enhancement of learning interest of students who received the Maple-Assisted Accelerated Learning is better than the enhancement of students who received conventional learning.

5. Acknowledgments
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6. References