Reception of mathematics education and mathematics exercises program to increase intelligence quotient

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Abstract. Intelligence Quotient (IQ) and scholastic intelligence are believed to be of fixed value for each individual. Although some research has emerged in the field of neurology which states otherwise. IQ is an important factor that helps a person get a job and improve his career. Through this paper, a proposed program to increase IQ using mathematics education and mathematics exercises will be presented. It is hoped that in the future this program can be tested and implemented for many people in need. The research show that majority of student are interested to program which designed to increase IQ.

1. Introduction
Intelligence Quotient (IQ) is an indicator that is measured in an individual. This indicator is quite popular and is used by various educational institutions. Several uses of IQ, for example, are to evaluate whether an individual is predicted to have sufficient intellectual power to participate in an educational process. In the process of applying for a job, IQ is also measured to evaluate whether the worker will be able to do the intellectual work required for a particular job description even it is still debatable [1].

Generally, people understand that IQ is a performance that is fixed and cannot be improved. This can be seen from the lack of a program designed to improve IQ performance. Whereas in a research, confirm that a person's intelligence, which is summarized in the IQ test, can change in high school students, through several activities and learning [2]. This prompts a need for further research on how people's perceptions of IQ, the contribution of IQ, and their acceptance of IQ improvement programs.

There are several studies that have looked at increasing IQ. One of them is research that examines the role of relational training on intelligence quotient [3]. Several other actions can also affect the increase in IQ, such as parenting patterns [4], change of domicile [5], IQ improvement programs for pre-school students [6], Schooling in adolescence [7], enrichment programs [8], Music Lessons [9], diet [elizabeth] and several other studies.

IQ is one of the performance indicators that affects other important indicators. For example, there is research that examines the influence of IQ on trading and investing behavior [10]. IQ is also a predictor of academic and career performance [11-13]. Several studies have shown the chance of an increase in IQ, and the role of this increase in IQ as a reinforcement to further investigate the perception and acceptance of students towards programs designed to increase IQ.

2. Methods
This study conducted a survey of 132 students. A total of 2 respondents were considered as outliers, so there were 130 respondents we used the survey results for further data processing. The majority of
respondents are 4th year students in the Industrial Engineering study program. Some of the respondents were 3rd year students.

The survey pulls some information. Some of them are IQ and gender scores. Each respondent was asked to remember whether they perceived mathematics as their favorite subject when attending education since primary education. Respondents were asked to rank mathematics as a favorite subject.

After that the respondents were asked to give their opinion whether IQ could be increased or not. The respondent was asked whether IQ support the process of education, career, and getting a new job. Respondents were asked to express interest in programs designed to increase IQ scores.

3. Results and Discussion

Figure 1 shows the distribution of respondents' answers to the respondents' perception questions on the role of IQ. The majority of respondents expressed interest in increasing their IQ score. The majority of respondents agreed that a high IQ helps academic achievement. The number of respondents who agreed was as many as the students who were neutral on this question. This distribution is also seen in the question whether high IQ scores will affect performance in the workplace. Fewer respondents said they strongly agreed than those who agreed or were neutral for the statement that IQ was an important factor in the process of applying for a job.

Figure 2 shows the respondents' answers to the other two questions regarding perceptions about the influence and role of IQ. Compared to other questions, the most optimistic answer was given to the question whether the respondent said that IQ could be increased. For the last question, respondents expressed their interest and great interest in joining a program designed to increase IQ.
Figure 3 shows the Regression Plot between the favorite level variables in mathematics to the IQ score. The regression plot shows that there is no positive correlation between considering mathematics as a favorite subject and IQ scores. This shows that not necessarily someone who likes math will have a high IQ. This happens for all levels of education, from elementary, junior high, high school and tertiary education. In fact, there tends to be a relatively negative correlation between IQ and the statement of mathematics as a favorite subject. This is especially true at the tertiary education level. Even though it is on the IQ Test, the thing that is posed is entirely mathematics. Several sections of the IQ Test evaluate participants' language proficiency. However, the logic that is tested in these language skills is also taught in mathematics.

Figure 4 shows the box plot for two variables, namely the IQ score against the level of student preference for mathematics in college. IQ scores are divided into 3 groups; low, medium, and high. The diagram shows that students who have IQ scores in the medium group tend to like mathematics in college. Meanwhile, respondents with IQ scores in the High and Low groups have the same level of preference for mathematics.
Figure 4. IQ-Grouped Score with Favoritisms of Mathematics in Higher Education

Figure 5 shows a regression plot between the perception that IQ can be increased and respondents' interest in programs designed to increase IQ. There is a positive correlation. This indicates that respondents who believe that IQ can be increased have a high interest in IQ improvement programs. The opposite also applies, namely respondents who feel that IQ cannot be increased, so they will not be interested in an IQ improvement program. Other research has also found a person's perceptions of IQ will influence their actions on these IQ related matters [14].

Figure 5. Process analysis.

IQ improvement programs can be designed to help students. Of the respondents we studied, the majority of respondents perceived that IQ would be able to help them in the study process. This IQ enhancement program could also be designed to assist the employability program of the college. It can be seen that the majority of respondents think that IQ helps careers after graduation and helps the process of applying for jobs. It is predicted that this program will be responded well by students. This is based on the majority of respondents expressing interest in this program and the belief that IQ can indeed be increased. There is other research that examines the relationship between motivation and participation in IQ improvement programs [15].

4. Conclusion
Based on the research that has been done, it can be seen that respondents perceive that IQ education can support the achievement of several achievements. IQ supports academic assignments, the process of
applying for jobs, and advancing careers. Respondents also perceive that IQ can be increased. When offered to take part in an IQ improvement program, respondents were attracted to join and get involved.

This IQ improvement program can be considered to be an official program at educational institutions. In previous research, it was explained that IQ was proven to be increased through several student activities at the high school level. However, it does not rule out that the opportunity for this increase in IQ can also be experienced by students at the college education stage. This program is expected to be an added value for students and assist students in carrying out their role in society after graduation.

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