

## 215. Science Quiz on TV: An Interactive Approach to Promote Science to Elementary School Students

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**Abstract.** Since 2008, the Ministry of National Education of the Republic of Indonesia has decided to include science as one of the subject of the national level final examination for students, from elementary to senior high school level. Many programs, such as Science Olympiad and Science Festival, have been executed to encourage students to learn science.

This year, a new program has been carried out. DoctoRabbit was assigned by the Ministry of National Education to design and execute an interesting science quiz for elementary school students to be aired on TVRI (the government owned national television). The series of thirteen episodes of the program have been taped and just broadcasted since October 18, 2010.

The duration of the program was 55 minutes, consisted of four main segments, i.e. Science Games, Logical Test, Science Experiment, and Science Challenge. In every episode, there were 100 students from five teams involved as the participants and another 100 students as the audiences. Juries were elected from academicians, celebrities, and practitioners.

Students and teachers were excited with the program. The quiz has broaden the chance for more students to get involve in a science competition, while the chance to join in a Science Olympiad was limited to the best and intelligent students only. The competition was also in a fun environment. The Ministry was satisfactory with the program and planning to continue it next year.

**Keywords:** Science quiz, TV program, Science for the elementary school students

### Introduction

Not many countries regulate a national exam for elementary school students (Year 6). Indonesia is one of very few countries that conduct it since 2008. There are three subjects to be examined: Indonesian Language, Math, and Science. This new regulation has brought pro-cons from educators and public. They who are in favor of the national exam told that the result would be a good data to map the quality of teaching and learning at schools all over Indonesia. But they who are against it told that it is not fair to the students since their final result will be judged only by the six hours exam, rather than the process of their six years of learning.

Whatever the pro-cons said, the reality to the students is they still have to face the national exam and put their effort to pass it. Every year, Year 6 students and their parents are busy with the preparation to make them ready to do the national exam. They take additional courses after school, although their schools have added longer hours for special preparation towards the exam. Many after school courses business arisen to take the opportunity. Consequently, teachers and parents tend to drill the students with all questions and answer exercises to memorize all subjects, without considering whether they understand it. It is a very stressful year for the students, teachers, and parents.

To help students to overcome their stress, educators and the Ministry of National Education should continuously offer several education programs that are fun and interactive for them to learn about the subjects, especially science. Otherwise, students may find science is a boring and difficult subject, and that situation will not supportive to the quality development of science knowledge and skills of the students.

### The Important Findings

There were many researches have been conducted on science education for children. One of it was the Cognitive Acceleration through Science Education (CASE) project in UK (Bennet, 2003). The key research findings from that project were as follows:

- By the age of 14, pupils of average ability are unlikely to have developed the intellectual abilities to cope with abstract ideas in science.
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- Much of the content of the science curriculum for 14-16-year-olds in the 1970s and 1980s was outside the intellectual grasp of substantial numbers of pupils.
- The CASE project has yielded evidence that a specific program of activities included in science lessons for pupils aged 11 and 12 will lead to improved performance in science, mathematics and English examinations at age 16+.
- Explanations for the effects of CASE vary as to whether the materials enhance certain specific aspects of intellectual development or more general cognitive development.
- There has been debate in the literature over the claims made for CASE and the extent of its effects on pupils' performance.

Besides the above findings, we also know that there are three types of learning, so called "Bloom's taxonomy of Learning Domains" (Bloom, 1956), which are consists of cognitive (knowledge), affective (attitude), and psychomotor (skills).

### Science Quiz on TV

Based on the above research findings, especially the statement that the average children less than 14 years old have difficulties in understanding the abstract ideas of science and considering all children learning domains, I proposed the uses of an interactive science quiz on TV to promote science understanding to the elementary school students. Why does the science quiz on TV will help children to understand science? It is just simply because it is fun, entertaining, educating, and broadcasted nationwide. Children will eagerly watch the program without any objection.

Through my company, DoctoRabbit Science Inc., we proposed a concept for the Science Quiz on TV to the Ministry of National Education. It combined all learning domains and make the abstract ideas of science become more concrete or at least more understandable. It is fortunate that the Ministry accepted our proposal and appointed us to execute the program to be aired on TVRI (state owned TV Station). The program has been taped for 13 episodes and just broadcasted since October 18, 2010.

Duration of the quiz was 55 minutes and participated by 100 students from 5 schools (that means 20 students per school). There were 5 juries involved in every episodes, consists of a science educator, a science communicator, a psychologist or an educational expert, celebrity, and an officer from the Ministry of National Education. Content of the quiz was divided to 4 main segments played by different students from each team, such as follows:

### Science games

It was a team racing games, played by 10 students per school. An example of the games was The Ampera Bridge (name of a bridge in Palembang – a town in Sumatera Island) where 8 of the team members made a bridge from 4 sticks to help the other 2 team members across 'the river' without falling down. They learned how to balance their body.

### Logical test

In this segment, 3 team members would have to answer 4 questions included the reason of their answers after watching a video. To encourage students to answer the reason - regardless they answer is right or wrong, there were no zero scored unless they did not make any reason for their answers.

### Science experiment

Other 3 team members were required to make a science experiment as instructed by the juries and make a presentation afterwards. Again, no zero scored for this segment. In fact, this segment score is the highest among all other segments since it needs both motor and presentation skills.

### Science challenge

The last 4 team members would take part in this segment. They have to overcome the challenge given. For example, they have to follow a path in a mirror maze by looking through a mirror, without touching the side of the path that sound the alarm. If the alarm was sounded less than a certain number (which is decided by juries), then the successful team would get the highest score.

To make the quiz more attractive, each school was permitted to bring their own supporters or cheerleaders.

## Conclusion

This interactive quiz was designed to cope with all aspects of learning domains and make the science ideas more concrete. We have not made any research for the result of this program, but from some interview to the students and teachers participated in this quiz, we found that they were very enthusiastic and enjoy the program.

The Ministry of National Education has also asked us to develop the quiz nationwide for next year. This could be a sign that this program is acceptable and probably right to be an alternative approach to promote science understanding to the elementary school students.

## References

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