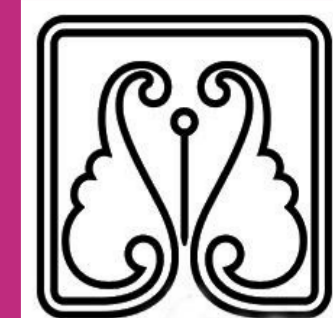


An exploration of usual student misconceptions in science: Overcoming philosophical confusion in science education

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INTRODUCTION and ABSTRACT

Many students do not understand concepts in science in the same way as experts and scientists. A science teacher should not underrate the importance and the persistence of barriers (misconception) to true understanding. Before misconceptions can be corrected, they need to be identified. A study was conducted to identify basic concepts of science among high-school students (N= 30)and to address some misconceptions regarding this topic using open-ended questionnaire.

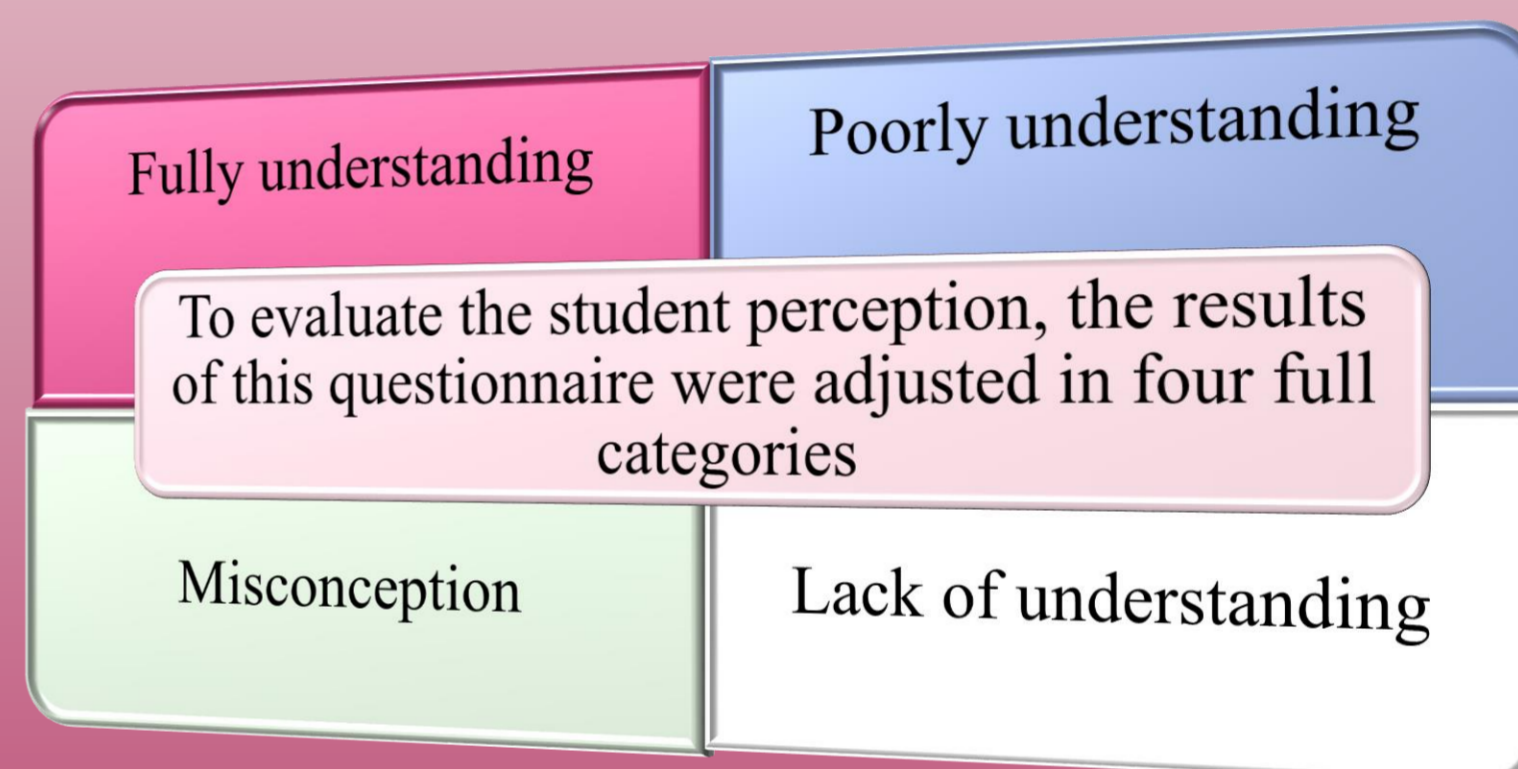
When students enter science classrooms, they often hold deeply rooted prior knowledge or conceptions about the natural world. These conceptions will influence how they come to understand their formal science experiences in school. Some of this prior knowledge provides a good foundation for further formal schooling, while other conceptions may be incompatible with currently accepted scientific knowledge.

In recent years there has been considerable interest in misconceptions held by students of science. There are several ways for obtaining information about student's knowledge. Individual interviews, open-ended questions and/or two, multiple-choice on specific science topics may effectively elicit students 'in -depth thinking .

Therefore, more attention is needed for teaching these subjects and all challenging concepts create misunderstandings among the students should be checked.

We also found that the youngest students often had roughly correct conceptions that appeared to be sensorial or empirical, but that these could be easily confused by what they had been subsequently taught as observed in older students. It is generally proposed that parents, teachers and the media all authority the development of misconceptions in science .

MATERIALS AND METHODS



RESULTS AND DISCUSSION

One of the most important factors which prevent students' meaningful and permanent learning is the misconception. Misconceptions are what students themselves develop and different from scientifically accepted concept.

This study was a primary investigation. The test was conducted in normal circumstances and without prior notice to students. A total of 30 students from the vali-o-Allah Ardeshiri school were selected and participated in this study. To collect data, a questionnaire was prepared and given to students. Major questions of questionnaire was built around five dimensions.

1. Why is picture and sound on the TV at night better?
2. Despite the sun shining in space, Why is space black?
3. What is the reason for the color change of clothes by getting wet?

4. Why is the sun yellow and sky blue?

5. Why do stars twinkle at night?

To evaluate the student perception, the results of this questionnaire were adjusted in four full categories: fully understanding, poorly understanding, misconception and lack of understanding was drawn up.

The first thing we observed was that, in general, the level of student misconceptions about the scientific concepts was lower than we had expected .

Checking responses given to the question of the questionnaire showed that second year high school students in the field of light have a lot of misunderstandings.

CONCLUSIONS

Our research findings show that students have different perceptions and misconceptions of the concept of light. Also, the study showed that the level of misconceptions varied between concepts. Our experience was that the younger students had a true and open tendency to learn and openly acceptable about new knowledge, but in the case of older students, there were many intercede factors including fear of failure and misconceptions that made it hard for them to engage in the learning process or accept that they may be mistake. These lead to the necessity to improve the proper education in order to decrease the misconceptions.

REFERENCES

- 1- Tugha Turabik, Gulsan Atanur Boskan, Procedia-social and Behavioral Sciences, 2015, 186, 1055-1063.
- 2- Tatiana V.Gons, Michael J.Dtrenfurth, Aamerican Society for Engineering Edncation, 2012 IL/IN Sechnal Conference.
- 3- Fiona Thompson, Sue Logue, International-Education Journal, 2006, 7, 553-559.
- 4- Sacit Kose, World Applied Sciences Journal, 2008, 3, 283-293.
- 5- Elahe keshavarz, Abbas Keshavarz, Aamerican Journal of pharm Tech Research, 2015-30, 4.
- 6- Elahe Keshavarz, Fateme Malekzade, 4th International Conference on Teaching Education and Learning(ICTEL), Istanbul, August, 16-17, 2015
- 7- Gerald A. winer, Jane E. Cottrell, Virginia Gregg, Jady S. FOURNIER, Iori A. bica, Adult S, Belief in Visual Emissions, Juny July 2002.

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