



ICCE 2016

24th IUPAC INTERNATIONAL CONFERENCE ON CHEMISTRY EDUCATION (ICCE) 2016

incorporating

INTERNATIONAL SYMPOSIUM ON PURE & APPLIED CHEMISTRY (ISPAC) 2016

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LABASIA BORNEO 2016

SOUVENIR PROGRAMME & EXHIBITION DIRECTORY

15 – 20th August 2016

Borneo Convention Centre Kuching
Kuching, Sarawak, Malaysia

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A System Approach to Practical Works on Chemistry: a New Method of Control

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The mission of Kolmogorov AESC is to teach gifted pre-University students (14-16 years old) at University style in order to simplify their start to science. One of important courses for students of chemical and biological classes is practical works on chemistry. Main goal of this course is verification and confirmation of knowledge obtained on lectures and from textbooks by own practice. Traditional sequence includes following steps.

- Preparing tables for observations record at home, using lection materials based on a manual.
- Experimental work in a laboratory, recording observations.
- Preparing to answer questions from student's book and to make conclusions on a base of experimental results
- A colloquium with a teacher (control).

One of main problems for this course is the lack of proper focus of students on key moments of experiments or substances properties. Therefore, we plan to improve the efficiency of practical works with the help of a new method of pre-colloquium control. During practical works, teacher or his assistant makes photos of substances or key moments of work and records short videos of processes if required. On the next lesson, these photos and videos are demonstrated to students. They must identify demonstrated substances, reactions and processes. This procedure stimulates students to be more observant and to pay attention to details of experiments. As a result, students are more oriented in their works and demonstrate better knowledge and understanding of their results on the colloquium.

POT11P

An Activity for Teaching Thermal Insulation Concept to Visually Impaired Students¹

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Students with visual impairments include those with low vision and totally blind. It is accepted that students with visual impairments have the same range of cognitive abilities as other students, but they learn through sensory channels other than vision, primarily hearing and tactile. But the concepts in science and mathematics have been found inaccessible to students with visual impairment due to use of figures, equations and graphs, so visual impaired students often have less opportunities for incidental learning and the reinforcement of concepts.

Students with visual impairments have unique educational needs which are most effectively making the world of science more accessible to students with visual impairments through collaboration and specific adaptations in both the science classroom and laboratory by providing students with a variety of opportunities to explore and examine real materials closely or using models.

Being as part of a large project, this study aimed to develop an activity for teaching concept of thermal insulation and materials that could be used for thermal insulation to visually impaired students. For this purpose, we have designed an activity based on using tactile materials for making science more

accessible to 6th grade students in a special school for visually impaired. Participant of this activity was eight students including a three blind students. The activity basically consists of simple, economical and easily accessible everyday materials.

Two glass jars with lid, one of which is placed inside another bigger jar were used to represents single glazed and double glazed windows. Both glass jars were filled with hot water. The initial temperature of the waters was measured and recorded by the students and then lids of the jars were closed. Then students were questioned about relative decrease in the temperature of the waters in the jars during the following 20 minutes through inquiry questions. After 20 minutes the lids of the jars were opened, the final temperature of the water in the jars was measured (initial temperatures were the same) and temperature changes of the small jars were compared to the one which was placed inside another bigger jar. Five minutes was given the students to discuss and think about their answers. All of the students actively involved the activity and follow up interviews indicated that this activity significantly contributed to the students' concept understanding of thermal insulation and the use of double glazed windows.