SCIENCE LABORATORY EXPERIMENT: ITS EFFECTIVENESS AND IMPORTANCE

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The conduct of Laboratory activities or experiment is essential to Science teaching, especially in the K – 12 program which focuses on student centered activities. It is considered as the heart of the Science teaching – learning process, since actual manipulation and first-hand experience is measured to be the best way for students to learn, and must be an integral part of the Science teaching. Throughout the process, students should have opportunities to design investigations, engage in scientific reasoning, manipulate apparatus/equipment, record data, analyze results, and discuss their findings. These skills and knowledge fostered by laboratory experiment are an important part of learning – the process of asking questions and conducting experiments as a means to understand the natural world (National Science Teachers Association, NSTA 2004). According to a study conducted by Emuas and Sabri (1999), it revealed that there is a strong relationship between the total number of laboratory experiment in Secondary schools and the improved academic achievement of students in science theory and laboratory courses. Hence, academic achievement or academic performance is the outcome of education – the extent to which a student, teacher or institution has achieved their educational goal.

According to the American Association of Advancement of Science, instructional science laboratories are widely regarded as key component of science instruction because most sciences are activity based explorations into the natural world. It is widely accepted that science is better taught using the discovery method or the experimental approach. The use of this method is based on student
participation and involves amongst others identifying problems, posing relevant

questions, performing efficient and effective experiments, and making judgments on
alternative hypotheses and interpretation of data. Students therefore learn to
discover, learn from discovery and learn by discovery. This method requires a high
level of interaction between the learner, the teacher and the area of study, available
resources, and the learning environment.

Laboratory know how is essential and vital to the different laboratory activities
that are to be done on the different laboratory experiments from grade 7 – 10,
examples are proper handling of apparatus and chemicals, identification and
familiarization of laboratory apparatus, basic use like in separation of mixtures and
other basic tasks. With this thought, it is believed that students gain more
understanding of the things that are happening around them when they are exposed
directly to such condition; hence, laboratory experiment served its purpose well.

Many students learn best when given the task to explore and manipulate on their
own, they are able to grasp information and observations readily in such manner that
the K – 12 programs has been based upon, contextualization and localization.
Laboratory rooms are also thought of to be the best place were these
experiments and other laboratory activities are to be conducted since it is equipped
with proper tools and equipment that are needed to be able to conduct these
activities properly and monitored by the concerned teacher. Major benefits of this
activity based learning are that it makes the subject matter more comprehensible,
minimizes forgetting, and is more likely to lead to transfer of learning and to acquire
favorable attitudes towards a particular lesson and toward learning in general.
Schools must therefore give their utmost concern and attention in providing
efficient and worthy laboratory rooms for Science teachers as well as well guided
laboratory based activities to be able to realize to its fullest and to effectively attain the aim of the Science program specifically in ensuring integrated and seamless learning or spiral progression.

References:
Turpin and Cage 2004; Welch and Walberg 1972; Fraser 1986; Bredderman 1983
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