

Using Multimedia for Project based Learning

Monika Davar

Assistant professor, Maharaja Surajmal Institute,

Janakpuri, Delhi, India

monikadavar@msi-ggsip.org

Abstract: In Recent times, schools can no longer rely on traditional educational methods. These methods must be supplemented with innovative educational experiences and multimedia. This paper focuses on use of multimedia for project based learning in science. Project based learning using multimedia is an innovative method of teaching in which students conduct a project using multimedia and which results in a multimedia product i.e. technology-based presentations, such as a computerized slide show, a Web site, or a video. Teaching of science involves clarification of abstract concepts and calls for visualization of microscopic organisms, structure of an atom, cell, astronomical bodies, creation of universe etc. These challenges are met effectively by using graphics, animation and simulation on computer. ICT facilitates accurate representation of abstract scientific concepts and processes. ICT helps students to gather, organize and display information in a systematic and innovative manner. The paper discusses the key features of Project based learning using multimedia and illustrates its use for teaching science. Research findings related to this innovative approach are also discussed.

Key Words- Project based learning, multimedia, instructional approach, teaching science, supporting researches

1. INNOVATIVE METHODOLOGIES IN EDUCATION

Using innovative methodologies and integrate multimedia in the teaching learning process is the need of the 21st Century. In recent times schools are expected to provide opportunity to students not just to complete school successfully but also empower them to be successful in the 21st century. For a student to be competitive in the global market, we can no longer rely on traditional educational methods. These methods must be supplemented with innovative educational experiences and multimedia. Information and communication technology provides opportunities for students to engage in active participation, exploration and research and apply their knowledge in appropriate situations.

This paper focuses on use of multimedia for project based learning in science. Project-based learning is an educational method which has been in use since a long time. The use of multimedia is a recent form of communication with a lot of potential. The combination of project-based learning and multimedia leads to an innovative teaching strategy i.e. “project-based multimedia learning.” Project based learning using multimedia is an innovative method of teaching in which students conduct a project using multimedia and which results in a multimedia product i.e. technology-based presentations, such as a computerized slide show, a Web site, or a video.

Project based learning is a comprehensive instructional approach which engages students in sustained cooperative investigation. It involves students in problem solving investigations and other meaningful tasks, allows students to construct their own knowledge and culminates in a realistic product. The teacher acts as a motivator and facilitator in the construction of knowledge and guides the students in the right direction. The main features of project based learning are:

- It provides freedom to students to plan and carry out problem solving investigations and other meaningful activities.
- It is based on cooperation and collaboration among students as they engage in sustained cooperative investigations.
- Project based learning encourages active learning
- It involves identification of the problem, collection of data, designing and conducting experiments, analyzing the data, drawing conclusions and reporting it.
- It culminates in a realistic product such as a report or a presentation.

- It inculcates scientific attitude and provides training in scientific method
- It brings students close to **reality** as they work on real life problems in natural settings.
- The project undertaken is **purposeful** for the students and leads to learning.
- Projects emphasize on **activities**, exploration and investigation
- Project is of **utility** or use to the students in dealing with real life situations.
- Project work involves **correlation** of knowledge obtained from different subjects.
- Projects involve **group work** and collaboration among team members.
- Projects **create** interest in the students for the topic.
- A good project is neither too easy nor too complex yet **challenging** enough to retain the interest of the students.
- A project is **based on needs and abilities** of the students.
- A good project is **practically feasible** and takes into account the resources available.
- A project **widens the mental horizons** of students.

In project based learning, teacher provides a situation which presents a problem and students are motivated to work upon it. Students discuss the problem and plan out the activities to solve the problem. Students work in groups, investigate and conduct activities and finally submit a project report or give a presentation.

II. SIGNIFICANCE OF INTEGRATING MULTIMEDIA IN PROJECT BASED LEARNING

Multimedia means the integration of media objects such as text, graphics, video, animation, and sound to represent and convey information.

Computer brings up-to-date and instant information to the students. ICT helps students to gather, organize and display information in a systematic and innovative manner.

Technology allows visualization and simulation of abstract concepts and

dangerous experiments in science which cannot be performed in reality. For instance, nuclear reactions such as nuclear fission and nuclear fusion can be simulated on computer. Such reactions cannot be demonstrated in classroom situation. Teaching of science involves clarification of abstract concepts and calls for visualization of microscopic organisms, structure of an atom, cell, astronomical bodies, creation of universe etc. These challenges are met effectively by using graphics, animation and simulation on computer. ICT facilitates accurate representation of abstract scientific concepts and processes.

The computer can also serve as effective communication tool between individuals in a group. Networked projects can be undertaken where students work with others, conduct their research and analysis online and then construct multimedia presentations collectively as a group.

Real time data collections provide a touch of reality and authenticity to what is being learnt. Students can use ICT not only to analyze data and interpret the findings but also to present their project work in the form of multimedia presentation.

III. FEATURES OF PROJECT BASED LEARNING USING MULTIMEDIA

In addition to the features listed above, this method also has the following dimensions:

- Learning objectives are based on knowledge and skills to be attained by students (as per curriculum) using multimedia
- Use of multimedia-Students not only use multimedia products created by others but also create it themselves .Video clips, pictures ,recordings and other media objects serve as raw material for their presentations, videos, websites or any other multimedia product
- Students make decisions regarding the form and nature of investigations to be carried out, the use of multimedia during the course of the project and the final multimedia product. Teacher provides guidance and acts as a facilitator.
- Assessment strategies to assess students learning will be based on judging their collaborative and investigatory activities, scientific concepts applied and the quality of their multimedia products submitted.
- Related to real life- Activities are so designed as to be related to real life.

- It takes longer time duration to complete (compared to regular classroom teaching)

IV. ACTION PLAN FOR PROJECT BASED LEARNING USING MULTIMEDIA

- Outline the objectives of the project and milestones to be achieved
- Introduce the project to the students
- Provide computer and other resources
- Form student groups
- Preliminary research and planning
- Investigatory activities using multimedia
- Presentation of the project using multimedia
- Evaluation by the teacher

V. PROJECT BASED LEARNING USING MULTIMEDIA: AN ILLUSTRATION

Following is an illustration of how technology can be used to support project based learning. For instance, for the topic 'Pollution' teacher can begin with showing some slides of polluted environment. Students are asked to identify the problem on the basis of similarity between the various slides. Some students may be able to identify that 'The environment is unclean or polluted.' Teacher can then motivate the students to take up the problem of 'Pollution' as a project.

Students of the class are divided into groups. These groups collect information on pollution from internet. Then the groups investigate the problem at specific locations with high levels of air pollution, water pollution, land pollution and noise pollution. The groups use ICT to record and analyze their observations. All the groups after completing their study present their work in the form of a multimedia presentation.

For instance, the students working on water pollution are asked to collaborate with another group of students in another state to compare the level of pollution in another river. Here the role of technology assumes significance as students in Delhi interact with students in Chennai who conduct a similar project on Periyar River. These distant learners collaborate via ICT to share information, analyze data and work together to present their findings.

Similarly other groups conduct investigations with their focus on land pollution, air pollution and noise pollution. Thus all the groups use ICT in the following manner:

- To collect latest data on Pollution
- To select and organize relevant data
- To interact with distant learners working on the same project
- To analyze data obtained from different locations investigated
- To make comparative analysis of findings and represent them graphically
- To prepare a multimedia presentation using visuals and animation

The above given illustration can serve as a model for teachers and teacher educators to use ICT to support project based learning.

V. WHAT RESEARCHERS SAY

Research studies have shown that

- Students taught through project method retained content for a longer time, had better problem solving abilities and collaborative skills and helps students to perform well compared to students taught through traditional method of teaching (Strobel and Barnveld, 2009, Walker and Leary, 2009).
- Condliffe et al. (2016) have also reported that the design principles most commonly used in PBL coordinate well with the goals of preparing students for deeper learning, higher-level thinking skills, and intra/interpersonal skills
- Newmann and Wehlage in 1995 reported that project based learning can also provide an effective model for whole-school reform.
- Project based learning is especially beneficial when supported by technology. As per Brown & Campione, (1996), technology makes the knowledge construction process explicit, thereby helping learners to become aware of that process.
- Krajcik et al., (1994) research clearly highlights that using technology in project-based science makes the environment more authentic to students, because the computer provides access to data and information, expands interaction and collaboration with others via networks, promotes laboratory investigation, and emulates tools experts use to produce artifacts."

To conclude, it is justified to say that technology usage in classrooms is not merely the usage of gadgetry; rather it is a systematic approach which can lead to a revolution in the teaching learning process. Despite its innumerable benefits, teachers are still wary of adopting innovative technology based methods. The challenge is to leave behind the teacher dominated traditional methods and gradually adopt such child-centred innovative methods to empower students to be successful in the 21st century.

REFERENCES

- [1] Edutopia(2012),Project based learning research review, [online] Available:<https://www.edutopia.org/pbl-research-learning-outcomes>
- [2] M.Davar-*Teaching of Science*; First Edition; Prentice Hall of India,2012
- [3] NCTE- *X-PDITTE toward excellence in teacher education'Handbook for teachereducators,Ver 1*,NCTE,Delhi,2007.
- [4] M.Simkins, K.Cole, F.Tavalin and B.,Mean "Increasing Student Learning Through Multimedia Projects", *ASCD*, StAlexandria, VA 22311-1714,2012.
- [5] Thomas,J.W.(2000), 'A review of research on project-based learning' [online] available:<http://www.autodesk.com/foundation>.