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***Original Contribution***

# NEW CHALLENGES FOR THE PROJECT BASED LEARNING IN THE DIGITAL AGE

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**ABSTRACT**
This article is designed to present the benefits of using the methodology and tools of the project based learning. The paper describes the main characteristics of the project based learning. Introducing projects into the curriculum is not a new or revolutionary idea in education. During the past decade, however, the practice has evolved into a more formally defined teaching strategy. Project-based learning has gained a greater foothold in the classroom as researchers have documented what teachers have long understood: Students become more engaged in learning when they have a chance to dig into complex, challenging, and sometimes even messy problems that closely resemble real life. The Project Based Learning model is similar to real world jobs where tasks and projects are a part of an employee's daily work.

**Key words**: project based learning, information and communication technology, education, collaboration, self-directed learning, knowledge, skills, competences.

## INTRODUCTION

The rapid development of information and communication technology and especially the recent advances in the Web has led to the reorganisation of work methods and processes in all fields. Collaborative work in geographically distributed teams is increasingly being used. These provided new ways for people to communicate on a global scale and assess vast amounts of information Moreover, life-long learning approaches are being favoured due to continuous changes in technology and their consequences on the job market.

Nowadays technology is an increasingly important part of the whole educational process. Many organisations apply different type of Web Based Training systems extensively to improve their current teaching, learning and training practices. Universities, faculties, research departments and other higher educational facilities usually offer some kind of Internet based courses for their students as a supplement or sometimes even as a complete replacement of their classroom courses. But usually, such systems do not take into account recent advancements in teaching or learning paradigms.

Unfortunately still the old paradigm dominates in many educational institutions. It is of urge to shift from a teacher centered approach to a student centered one. It is time the passive learner to be engaged actively in creating of personal knowledge. The traditional role of teachers as knowledge providers should be finally changed to that of learning facilitators, since students can learn from the wide sources of information enabled by the Internet. The students should become better general problem solvers and better group workers. They need both knowledge and skills to succeed. This need is driven not only by workforce demands for high-performance employees who can plan,

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collaborate and communicate, but also by the need to help all young people learn civic responsibility and master their new roles as global citizens.

**PROJECT BASED LEARNING**

Project-Based Learning (PBL) is one possible solution. PBL is a constructivist-based approach that aims to address the above issues. The approach originated more than a century ago with John Dewey and his followers (1, 2). John Dewey supported "learning by doing". Constructivism (3, 4, 5) explains that individuals construct knowledge through interactions with their environment, and each individual's knowledge construction is different. So, through conducting investigations, conversations or activities, an individual is learning by constructing new knowledge by building on their current knowledge.

Constructionism takes the notion of individuals constructing knowledge one step further. Constructionism (6, 7) posits that individuals learn best when they are constructing an artefact that can be shared with others and reflected upon, such as plays, poems, pie charts or toothpick bridges. Another important element to constructionism is that the artefacts must be personally meaningful, where individuals are most likely to become engaged in learning. By focusing on the individual learner, project based learning strives for "considerable individualisation of curriculum, instruction and assessment - in other words, the project is learner centered" (8).

Project Based Learning (PBL) is a teaching /learning model that involves students in problem-solving tasks, allows students to actively build and manage their own learning, and results in students -built realistic deliverables. Shortly this is an instructional model that involves students in investigations of compelling problems that culminate in authentic products (Intel® Teach Program: Designing Effective Projects).

There is no one accepted definition of PBL. However, BIE /The Buck Institute for Education/ very comprehensive defines standards-focused PBL as a systematic teaching method that engages students in learning knowledge and skills through an extended inquiry process structured around complex, authentic questions and carefully designed products and tasks.

**THE TECHNOLOGY**

The Internet is often of great assistance in the application of the PBL model. Artefacts can be created and shared using web technology and web materials can assist in creating an atmosphere that mirrors real life contexts. Images, video and sounds can be incorporated into the project design and a variety of relevant resources can be centralized within one web page.

Small group global student communication over the Internet is accomplished through the use of synchronous and asynchronous tools. Synchronous tools provide real time communication between group members and asynchronous tools provide communication between members of a group without collaborating at a set date and time.

Chat, a form of synchronous communication allows two or more people to exchange ideas and discuss topics in real time over the Internet. When conducting a chat session text, audio, video or combinations of all three can be used. Programs that can be used by students include AOL Instant Message, Apple iChat, MSN Messenger, Yahoo Messenger, Skype, and many others. These programs are used on the Internet and communication can be achieved between any groups of people who share user names with each other.

Web conferencing programs provide tool sets providing additional synchronous communication beyond the limits of chat. The chat feature found in most of these programs allow for text, audio and video chat and these programs also allow students to interact by providing whiteboards, notes, discussion areas plus the ability to display and share files. An added feature of some programs is the ability to share a program running on one computer so a user on another computer can interact with it. Web conferencing programs include Elluminate and Adobe Connect, formally known as Breeze, provides limited security; visitors to the program need to login and their presence can be seen.

Although a web page can be used for communication while students are working on projects their use is limited, slow, and cumbersome. New web page programs, often called Web 2.0 tools such as blogs and wikis, provide new forms of asynchronous communication for students.

Text entries into an online journal published on the Internet and displayed in reverse chronological order are called a blog that contains text, hyperlinks, and graphics. The term blog come from web log and can be used by students working in global groups as they plan projects. Popular educational blogs include: Learnerblog http://www.learnerblog.com/summary.php, Edublogs.com http://edublogs.org/, and Worldbridges http://worldbridges.net/. Blogs can be password protected and many blogs allow comments.

A wiki is an interactive web page that allows visitors to add, edit, and remove content. As a tool for collaboration between students working on a global project students log into the wiki and edit content on the web page. Planning a project or writing content can become very collaborative through the use of a wiki. Some wikis are password protected limiting viewing of the content while others only have passwords to limit who can edit content.

Google Docs provide word processing and spreadsheets online as part of a web page that can be viewed and edited by invited collaborators. A discussion form is provided so students can text chat about the contents while visiting the document. Students need to obtain a Google account that is free to access the Google Docs web site. Access is limited to invited viewers and collaborators so security is provided at a medium level and teacher oversight is always recommended.

Learning management systems such as Blackboard - http://www.blackboard.com/us/index.aspx and Moodle - http://moodle.org/ and many others deliver educational content by providing online systems for instruction, professional development, communication and assessment. Using a learning management system student participate asynchronously in global learning communities. Team members need to have an account to use the system. Students working on a global project collaborate by communicating synchronously and asynchronously with the various tools provided. Learning management systems are purchased by an educational institution and installed on a local server. Teachers wishing to use a learning management system need to work with their institution's technology coordinator to obtain the program for student use. Level of security is excellent, as each user must have an account that is obtained from the hosting institution system.

What are the attributes of effective projects? Outstanding projects (9):

- Recognize students' inherent drive to learn, their capability to do important work, and their need to be taken seriously by putting them at the centre of the learning process.
- Engage students in the central concepts and principles of a discipline. The project work is central rather than peripheral to the curriculum.
- Highlight provocative issues or questions that lead students to in-depth exploration of authentic and important topics.
- Require the use of essential tools and skills, including technology, for learning, self-management, and project management.
- Specify products that solve problems, explain dilemmas, or present information generated through investigation, research, or reasoning.
- Include multiple products that permit frequent feedback and consistent opportunities for students to learn from experience.
- Use performance-based assessments that communicate high expectations, present rigorous challenges, and require a range of skills and knowledge.
- Encourage collaboration in some form, either through small groups, student-led presentations, or whole-class evaluations of project results.
- Build in opportunities for reflection and self-assessment.
- Result in useful products that demonstrate what students have learned.
- Culminate in exhibitions or presentations to an authentic audience.

**SUCCESSFUL STEPS OF PROJECT-BASED LEARNING**

Whether students work individually, in pairs, or in groups, having them design something from scratch taps their creative abilities (10). When using the project-based learning strategy, it is almost guaranteed that the endeavour will be interdisciplinary. The teacher's role is to serve as coach, guiding students to use a variety of resources, employ a strategy that is fun and motivating, and uncover content with depth and breadth.

If we examine project-based learning in the most general way, we can break it down into the following nine steps (of course, teacher-coaches should modify the steps accordingly to suit the task and the students):

- The teacher-coach sets the stage for students with real-life samples of the projects they will be doing.
- Students take on the role of project designers, possibly establishing a forum for display or competition.
- Students discuss and accumulate the background information needed for their designs.
- The teacher-coach and students negotiate the criteria for evaluating the projects.
- Students accumulate the materials necessary for the project.
- Students create their projects.
- Students prepare to present their projects.
- Students present their projects.
- Students reflect on the process and evaluate the projects based on the criteria established.

Autodesk Foundation (14) describes the following objectives and outcomes of project based learning:

- Problem-solving skills
- Self-directed learning skills
- Ability to find and use appropriate resources
- Critical thinking
- Measurable knowledge base
- Performance ability
- Social and ethical skills
- Self-sufficient and self-motivated
- Facility with computer
- Leadership skills
- Ability to work on a team
- Communication skills
- Proactive thinking
- Congruence with workplace skills.

Thinking in European prospective it is easy to realise that the project based learning is one of the best methodologies for achieving and contributing to the all eight key competences for lifelong learning, defined from European Commission (11):

- Communication in the mother tongue
- Communication in foreign languages
- Mathematical competence and basic competences in science and technology
- Digital competence
- Learning to learn
- Social and civic competences
- Sense of initiative and entrepreneurship
- Cultural awareness and expression.

**CONCLUSION**

Project Based Learning is still quite new methodology for most of the European universities. It seems interesting and attractive not only for the students, but for the teachers and companies as well. Self management, solving real tasks, working in real environment, team work, leadership-that are some of the main advantages of that method. These claims are crucial for a professional work after graduation. Therefore project work is an effective preparation for a future job.

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