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IMPLEMENTING PROJECT BASED LEARNING

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Olena Medvedkova, English language, teacher

Technikum Informatyki Edukacji Innowacyjnej, Łódź, Poland



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WHAT IS PROJECT BASED LEARNING?

Short and known definition

Project Based Learning is a teaching method in which students gain knowledge and skills by working for an extended period of time to investigate and respond to an engaging and complex question, problem or challenge.

or in simple words:

Students are presented with contextual situations and asked to define the problem, decide what skills and resources are necessary to investigate and solve the problem, and then propose possible solutions.

ESSENTIAL PROJECT ELEMENTS INCLUDE:

- Key Knowledge, Understanding and Success Skills – the project is focused on students learning goals, including standards-based content and skills such as critical thinking, problem solving, collaboration and self-management.
- Challenging Problem or Question – the project is framed by a meaningful problem to solve or a question to answer, at the appropriate level of challenge.

WHAT IS PBL?

- **Sustained Inquiry** – students engage in an extended process of asking questions, finding resources and applying information;
- **Authenticity** – the project features real-world context, tasks and tools, quality standards or impacts;
- **Voice and choice** – students make some decisions, including how they work and what they create, need.
- **Reflection** – students and teachers reflect on learning, the effectiveness of their inquiry and project activities, the quality of student work, obstacles and how to overcome them;
- **Critique and revision** – students give, receive and use feedback to improve their process and products;
- **Public Product** – students make their project work public by explaining, displaying and/or presenting it to people beyond the classroom.

WHY PBL IS SO IMPORTANT?

- helps address standards – emphasize real-world application of knowledge and skills;
- development of success skills such as critical thinking, problem solving, collaboration, communication in a variety of media;
- provides opportunities for students to use technology;
- makes teaching and learning more enjoyable and rewarding;
- sustains and inspires teachers and students;
- creates new knowledge;
- learners achieve materials previously unknown to them (re-discovery);
- increases motivation and engagement in learning.

(IMPORTANCE OF) PBL REQUIRES:

- creative thinking;
- seeing relations in a new light;
- working in a meaningful context;
- effective communication;
- basic knowledge;
- building on work of predecessors;
- integration of research and education;
- going beyond content.

What does PBL do?

PBL simultaneously develops problem solving strategies, success skills and disciplinary knowledge bases.

How does PBL do it?

By placing students in the active role of problem solvers confronted with a (*purposefully*) ill-structured problem which mirrors real-world problems.

PBL HAS ITS ORGANIZING CENTER THE ILL-STRUCTURED PROBLEM WHICH...

- is messy and complex in nature;
- requires inquiry, information-gathering, and reflection;
- is changing and tentative;
- has no simple, fixed, formulaic, "right" solution.

PBL CONSISTS OF TWO COMPLEMENTARY INTER-RELATED PROCESSES

Curriculum Design

- Teachers design an ill-structured problem based on desired curriculum outcomes, learner characteristics, and compelling, problematic situations from the real world
- Teachers develop a sketch or template of teaching and learning events in anticipation of students' learning needs
- Teachers investigate the range of resources essential to the problem and arrange for their availability.

Cognitive Coaching

- Students actively define problems and construct potential solutions;
- Teachers model, support and make explicit student's learning processes.

Tasks		Experiences	
<i>Traditional</i>	<i>Refined Inquiry Based</i>	Identifiable PBS/PBL Activities	Outcomes
Following directions provided with the lab.	Designing a procedure to follow to answer the questions.	Use the designed procedure to implement a case study. Collecting specimens and document these specimens using digital imagery. Perform research around captured digital imagery to answer the PBL questions.	Planning Investigative Procedures
Filling in a data table.	Drawing Data Tables and Graphing the Results.		Formulating Hypotheses Graphing Making Inferences
Answering the conclusion question.	Writing a narrative summary that includes the conclusions drawn and next steps.	Perform trending of similar authored digital imagery regions to make comparisons. Determine graph type to use and graph results.	Collecting Data Communicating Valid Results
		Develop a presentation on collected samples that will aid in answering the PBL question. Present to a group for further analysis.	Reasoning and Decisions Critical Thinking

The Nature of Science

Collecting Evidence

Developing Models

Interpreting Evidence from Facts

Asking Questions

Making exhibits

Synthesizing Information

Stating Hypotheses

Testing Hypotheses

Drawing Conclusions

Communicating Results

Scientific Processes

FEATURES OF PBL PROBLEM ARE:

- introduction;
- content;
- learning objectives;
- resources;
- expected outcome;
- guiding questions;
- assessment exercises;
- time frame.

CREATING AN APPROPRIATE PROBLEM

- Choosing a relevant problem (a common situation can serve as a prototype);
- Ensuring that the problem includes a big idea and basic skills;
- Ensuring a complexity of the problem mimics a real-world problems;
- Ensuring that the problem is interdisciplinary;
- Ensuring that a prevention is possible;
- Ensuring the problem is significant;
- Generating driving questions (provocative and challenging).

SHIFTING ROLES

Teacher as a coach	Student as an active problem solver	Problem as a challenge and incentive for motivation
<ol style="list-style-type: none">1. Asking about thinking;2. Monitoring learning;3. Challenging students' thinking processes;4. Monitoring and adjusting levels of challenge;5. Keeping students involved;6. Keeping process of learning moving.	<ol style="list-style-type: none">1. Active participant;2. Engaged;3. Constructing meaning;4. Creative thinker/problem solver.	<ol style="list-style-type: none">1. Significant;2. Interdisciplinary;3. Provocative and challenging;4. Complexity;5. Ill-structured;6. Can be resolved.

Traditional Classroom

Teacher

Student

Questioning

Planning

Researching

Creating

Improving

Presenting

Project-Based Classroom

Teacher

Student

Questioning

Planning

Researching

Creating

Improving

Presenting

BARRIERS AND LIMITATIONS TO PBL

- generating appropriate problems;
- requires more time for students to implement the idea;
- valid assessment of the program and students;
- students should be responsible and independent learners;
- requires information and technical support;
- transferring of information is not via lecture;
- the processes of changing roles of a teacher and students;
- lacking of incentives for faculty.

THINGS TO CONSIDER

1. How should PBL be incorporated into the curriculum?
2. What problems should be used?
3. How problems should be presented?
4. How much should each problem be pre-structured?
5. What resources should be used?
6. What are the main goals of the project, what can students learn?
7. How to prepare students for PBL method?
8. How to construct a driving question?

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Thanks for your attention

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