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Training Module 1

Inclusion at school

Polo Europeo della Conoscenza
Junta de Castilla y León Consejería de Educación
PANEVĖŽIO RAJONO ŠVIETIMO CENTRAS
Make It Better
REPUBLIC OF TURKEY MINISTRY OF NATIONAL EDUCATION
FRIENDS OF EDUCATION
UNIVERSIDAD DE BURGOS

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Unit 3

Inclusive methodologies

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PROBLEM BASED METHOD - Definition

Problem-Based Learning (PBL) is a student-centered approach to learning, in which complicated real-world problems are used to challenge students. The problems are used as a tool to achieve both the required knowledge base and the skills to 'solve' them. The basis of PBL is that students learn by doing.

PROBLEM BASED METHOD

PBL is based on the messy, complex **problems** encountered in the **real world** which encourage to **learn, integrate, and organise the information** obtained so that it could be used to solve future problems.

PBL encourages students to solve problems effectively and think critically. It can also provide opportunities for working in groups, finding and evaluating research materials, and life-long learning.

PROBLEM BASED METHOD -
Implementation in the Classroom (I)

What are the steps in problem-based learning?

1) **Explore the issue**. Gather necessary information; learn new concepts, principles and skills about the proposed topic.

2) **State what is known**. Working individually and in groups, students list what they already know about the scenario as well as the areas in which they are lacking information.

3) **Define the issues.** Frame the problem in a context of what is already known and information the students expect to learn.

PROBLEM BASED METHOD -
Implementation in the Classroom (II)

4) Research the knowledge. Find resources and information that will help create a compelling argument.

5) Investigate solutions. List possible actions and solutions to the problem, formulate and test potential hypotheses

6) Present and support the chosen solution. Clearly state and support your conclusion with relevant information and evidence.

7) Review your performance. Often forgotten, this is a crucial step in improving your problem-solving skills. Students must evaluate their performance and plan improvements for the next problem

PROBLEM BASED METHOD - Main Components of the Method (I)

In the PBL learning process, students face a problem and use their previous knowledge try to solve it. In the process they **find out what they do not know and what they need to learn** to do their best.

Once they have found out what they need to learn, students search for information necessary to solve the problem in different sources (internet, books, magazines or people's experience). By doing so, they **personalise their learning**.

PROBLEM BASED METHOD -
Main Components of the Method (II)

The students then get back to the problem and apply their knowledge to work with their problem further on and solve it.

Once the problem has been solved, the students assess themselves and their peers. In this way, they learn to evaluate each other constructively. This assessment skill will be very valuable for their future learning experiences.

PROBLEM BASED METHOD - Suitability for STEAM (I)

PBL can be used to study all subjects, just a little bit of creativity is necessary. While the main problems can differ for various subjects, there are some features of good PBL problems that are useful.

The problem must be motivating. Students must be motivated to do deep research into the problem.

The problem should ask students to justify their decision and be ready to prove it.

PROBLEM BASED METHOD - Suitability for STEAM (II)

The problem should be connected to the students' previous knowledge.

One of the most attractive features of PBL is that it helps develop in students both, subject-specific skills (using diagrams and abstract models, acquiring and using relevant data, analysis of real-world issues, etc.) and transferable skills (time management, teamwork, independent learning, decision making, problem solving, communicating ideas and results, etc.).

PROBLEM BASED METHOD -
Strategies for inclusion

- Take time to explain instructional processes, answer the questions, consider their suggestions, and probe their hypotheses.

- Embed lessons with connections to the real world, and show relationships between the content/skills and the lives of real people.

- Monitor the disadvantaged students as they work, prod their learning, and support their hesitation.

PROBLEM BASED METHOD - Roles

TEACHER'S ROLE

The principal role of the teacher in PBL is that of an assistant or educational coach leading the students in the PBL process. As learners become more proficient in the PBL learning process, the teacher becomes less active.

STUDENT'S ROLE

In PBL, learners are progressively given more and more responsibility and become increasingly independent of the teacher for their education. PBL produces independent learners who can continue to learn on their own in life and in their chosen careers.

PROBLEM BASED METHOD -
Advantages for teachers

- Students are more engaged during lessons;
- It increases the time students spend studying;
- It fosters crossdisciplinarity.

PROBLEM BASED METHOD - Advantages for students

- it is a student-oriented approach;

- students find it more engaging and rewarding;

- it facilitates comprehension;

- students who have PBL experience evaluate themselves higher;

- PBL prepares for lifelong education.

INQUIRY BASED LEARNING - Definition

Inquiry-based learning is a learner-centered approach that channels learning through questioning and discovery. Students pursue their interests in search for answers to their own questions. They can collaborate to formulate their examination and then organize their quest for relevant information

INQUIRY BASED LEARNING -
Basic Components (I)

1) Making observations;

2) Posing questions;

3) Examining books and other sources of information to see what is already known;

4) Planning investigations;

5) Reviewing what is already known in light of experimental evidence;

INQUIRY BASED LEARNING -
Basic Components (II)

6) Using tools to gather, analyze and interpret data;

7) Proposing answers, explanations, and predictions;

8) Communicating the results and

9) Personal evaluation and response

INQUIRY BASED LEARNING - Teacher's Role (I)

Teachers' inquiry about the topic of interest is of paramount importance for the success of children's inquiry.

First teachers need to "become "inquiry literate" and then, encourage students to "engage" in inquiry at a deep, personal level. A teacher must know and must understand what the inquiry process is like.

INQUIRY BASED LEARNING -
Teacher's Role (II)

Teachers will have to teach students skills and gradually move them through stages that eventually increase students' independence and intellectual capacity.

Teachers can take up "six key behaviors" or roles with the process of transition: that of "direct instruction provider", "organizer", "questioner", "discussion facilitator", "mentor" and "facilitator of interpretation".

Teachers' role is also to support students, care for the development of the whole student and lead towards situated and authentic learning.

INQUIRY BASED LEARNING -
Main Components (I)

The major focus of design thinking is problem solving. All problems that need creative solutions can be addressed by design thinking. Design thinking methods are organized into three broad categories of need finding, idea generation and idea testing. More specifically the phases are to empathize, define, ideate, prototype and test.

INQUIRY BASED LEARNING - Main Components (II)

To describe the problem context from different stakeholders' perspective, designers use human-centered and empathetic methods. With their empathetic understanding, they reframe the problem and start to generate solutions. With prototypes designers find opportunities to take stakeholders' opinions on the solutions and test the effectiveness. After the test phase, the cycle may end, or relevant revisions can be made to improve the product.

INQUIRY BASED LEARNING - Implementation in the classroom (I)

To implement design thinking in the classroom, teachers provide guidance in each of the design phases. First, in the **empathy phase** students will engage in "try, observe, and ask" activities to understand the problem thoroughly from different perspectives.

For **"define and ideate" phases,** open-ended questions and brainstorming techniques will encourage students to reflect their empathetic understanding into their solution strategies by further research.

INQUIRY BASED LEARNING - Implementation in the classroom (II)

Within the **"prototype" phase** students are allowed to develop many rapid prototypes to take opinions from different audiences, so that they can improve their product and solutions according to their needs.

For the **"test" phase** students both test their design products with respect to the problem and reflect on the overall design cycle. Students also prepare presentations to share their process and products.

INQUIRY BASED LEARNING -
Student's Role

Students' role in design thinking is to participate in design thinking activities to create innovative solutions for complex problems. Students have individual accountability in all group activities. Developing a participatory approach to find and understand the complex problems of the 21st century, developing an open, explorative attitude, willingness to take part in the solution process and developing an ethical mindset are also among the roles of students within design thinking practices.

INQUIRY BASED LEARNING - Teacher's Role

The roles of the teachers in design thinking are to plan the process carefully to encourage all students' participation in the activities. By asking questions, providing resources and materials, and creating opportunities for students to experience design thinking skills teachers create an effective learning environment. Teachers' monitoring and facilitator roles are prominent.

INQUIRY BASED LEARNING -
Strategies for inclusion

Following the equity principle of design thinking education, all students must be given opportunities to participate in activities regardless of their gender, academic achievement, socio-economic status, etc. Having high expectations from all students, teachers can use differentiated learning strategies to encourage participation of all students in the learning process. Research shows that design thinking helps students reduce cognitive bias in different categories such as projection bias, which is very valuable in terms of inclusion.

INQUIRY BASED LEARNING - Advantages and disadvantages

Having strong goals and outcomes, design thinking practices also have some limitations.

Lack of creative confidence or mastery, wrong priorities, shallow ideas, anxiety and frustration, creative overconfidence, and teamwork conflicts are among the major limitations that students and teachers can face during the implementation.

SCAMPER -
Definition of the Method

The Philosophy of SCAMPER is based on the concept that „Any idea has emerged from another idea''. SCAMPER is a practical and joyful brainstorming technique in the discussion method, leading to an actual implementation in real life and supporting creative thinking. The SCAMPER brainstorming technique uses steps to review an object.

SCAMPER - Main Components

SCAMPER is the most convenient technique to use when students reach a dead end, or when they are about to steer away from the core of the subject. The questions used help to think fluently and flexibly, so as to lead to a creative thinking system.

While implementing SCAMPER, a unique object is chosen and transformed, improved, disintegrated or compounded with other objects through a brainstorming process. Questions asked allow a variety of opinions to emerge, enabling learners to develop their creativity as they start thinking in new ways about an object.

SCAMPER -
Implementation phases

According to the English dictionary, to "scamper" means „to run with quick light steps, especially through fear or excitement''. The acronym stands for an educational technique covering seven steps.

SCAMPER - Implementation phases (I)

Lets look at the letters which make up the acronym:

S: Substituting parts of the product or process for something else.

 Sample questions: What/Who else instead? What other materials, strategies, should I substitute?

C: Combining two or more parts of the product or process to create something new or to leverage synergies.

 Sample questions: What elements could I mix together? What parts may I join together? Which processes could I combine?

SCAMPER -
Implementation phases (II)

P: Put to another use - How would you put this object to another use, how could you reuse something from somewhere else?

Sample questions: What other ways are there to use this? Can the same solution be used in another place? Who else could benefit from this?

E: Eliminate - Think of what might happen if you eliminated parts of the product or process and consider what you might do in that situation.

Sample questions: What could I remove? If I do remove it, what could I miss, what could go faster, or slower? How can I reduce the amount of material used, or the amount of time dedicated? How can I make it lighter, or smaller?

SCAMPER - Implementation phases (III)

R: Reverse - Think of what you might do if parts of the product or process worked in reverse or were sequenced differently.

Sample questions: Which parts can I rearrange? Which layout fits best? Which functions can be swapped?

SCAMPER - Teacher's Role

The teacher determines the specific problem students need to solve. The students then brainstorm a wide range of solutions using the different techniques defined by the acronym. Recording every idea expressed during the brainstorming without judging it increases the production of creative ideas. The students apply the technique, following each step indicated by the letters of the acronym. The teacher acts as an assistant by addressing any question, contradiction or conflict that may arise.

SCAMPER -
Strategies for Inclusion

Ensure that everyone receives a similar share of air-time, and everyone is actively engaged; ask probing questions if needed. Criticise no idea, as wild as it might appear to be; in fact, try to encourage outlandish ideas, as they are very useful to open up the conversation. Encourage students to build upon each other's idea. Provide specific, repeated, evidence-based, personal and collective encouragement.

Be flexible in giving students opportunities to build and check understanding.

SCAMPER -
Advantages and disadvantages

Whereas the SCAMPER technique has been used for visual design to compose creative, productive ideas, some shortcomings can be observed like the lack of inclusion of the educational context.

Although the new technique is challenging, lessons promote student engagement, creative thinking and the ability to recall content knowledge. SCAMPER can be utilized for learners who lack motivation or who have learning difficulties. SCAMPER is used as a learning tool that fosters awareness, drive, fluency, flexibility, and originality.