

STUDENT-CENTERED LEARNING METHODS. PROJECT-BASED LEARNING AND PROBLEM-BASED LEARNING

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Annotation:

Learning should be an active process in which you gain knowledge from your experience and interactions with your environment. You are encouraged to think about what you already know and you learn to integrate new information with this existing knowledge. It helps you really understand the topic, form informed opinions, and gain new insights, instead of just memorizing everything. You'll find that it's easier to remember things this way. Problem-based learning dates back to the 1960s and is a student-centered pedagogy. Students learn a topic by solving problems and often work in groups to solve problems that often don't have the right answer. In short, "it enables learners to conduct research, integrate theory and practice, and apply knowledge and skills to develop a workable solution to a defined problem".

Project-based learning dates back to the work of John Dewey and William Kilpatrick and dates back to 1918 when the term was first used (Edutopia, 2014). Project-based learning is a teaching method in which students learn by exploring a complex problem, problem, or challenge.

Keywords: PBL, project-based learning, problem-based learning, teaching methods, student-centered class

Project-based learning involves students designing, developing, and building practical solutions to a problem. The educational value of the APP is aimed at building students' creativity to solve difficult or poorly structured problems, often in small groups. Typically, the APP guides students through the following stages or stages:

- Identify the problem
- Agree or design a solution and potential solution path to the problem (i.e. how to find a solution)



- Design and develop prototype of the solution
- Refine the solution based on feedback from experts, instructors and/or peers

Depending on the instructor's goals, the size and scope of the project can vary greatly. Students can complete the four phases listed above in a few weeks, or even multiple times in the same course time. Due to its emphasis on creativity and collaboration, PBL is enhanced when students have the opportunity to work across disciplines, use technology to communicate and execute products more efficiently, or design solutions for real-world problems posed by external organizations or companies. Projects don't need to be too complicated for students to benefit from PBL techniques. Often, simple, quick projects are enough to provide students with valuable opportunities to make connections between content and practice.

Make a project plan

Before starting a project with your students, you need to plan accordingly. This often happens without the input of the student, although I have seen some rare instances when students were able to co-create a PBL experience with the guidance of a qualified educator. Most teachers have a set of content standards and learning goals for which they are responsible, and the risks of working with students to co-plan a project are plans and projects that do not include outcomes. This result, perhaps because of what the project mainly aimed at. Students find it interesting. I am not suggesting that teachers disregard student interest, quite the contrary, but the planning phase of a project is where teachers map out the cognitive and thinking paths they want the students to take. Once that path has been clarified and a motivating question and student product(s) align with those learning and thinking goals, it is time to plan the schedule, including staging and evaluation. In this stage, students are not active in the project and the teacher identifies what they want students to understand and remember (Bloom's). These are knowledge and concepts that you will be asking them to think critically throughout the project, and you will want to consider what is just the basics to keep in mind and which is meaningfully applicable to further learning and development. Phase Launching the project



Once your plan is complete, now is the time to invite students to join the project as active participants! Starting a project can take many forms and include some kind of entry or hook event to help contextualize students and capture interest. From there, you'll want to come up with your motivating questions and authentic audience, two important tools that help unleash critical thinking. Find out more

With students participating in the project during this phase, you'll use your motivating question to unpack the list of questions they'll need to know to answer this DQ. This "Need to Know" list and the process it entails are an essential part of Why Is Creating a Culture of Investigation So Important? We advocate clarity about product, purpose, and audience, and a DQ that includes creative (Bloom's) or a synonym like design, development, author, etc. Stage Project implementation

During this phase of the PBL process, you will teach, orchestrate, and evaluate in a formative way by asking students to learn, reflect more deeply, and make connections with content, skills, and knowledge. knowledge that you identified (and possibly more) during the planning phase of the project. Depending on the scope and size of your project, you'll have multiple phases, both in terms of process and product, and in terms of important stuff to learn. During the project phase, you will engage students with teacher activities as planned in Phase 1, including inquiry exercises, collaborative learning activities, and live instruction. forward/clear as appropriate. Although sometimes unfairly confused, APP is not the same as "discovery learning". The role of an effective teacher is to While some may ask PBL questions or direct/clear instructions, what works?, this is a false binary and should not be left to students to understand or "discover" knowledge alone. new. As the attached figure shows, several elements of the Bloom taxonomy are involved in this stage.determine when to use appropriate teaching strategies.It is during project implementation that we ask students to apply, analyze and evaluate critical thinking with content and knowledge (what we want them to understand and remember).

In a situation where the education system is self-established, all forms of instruction, including project-based learning, are conducted remotely. We appreciate the great effort of the volunteer teachers, the Department, the Institute



for Education Improvement and the RTS, who responded quickly and coordinated with the teachers who followed the lessons on their channels. of TV. This has given many teachers, especially elementary school teachers, time to adapt and organize. If we can say this freely, we have a lack of educational content on national frequency channels and it is great that some of the hidden heroes of Serbian education have received the attention they deserve. of the media. However, following a lesson someone teaches on television is a one-way communication, in which the student plays a passive role. In this sense, it is the great credit of every teacher who has managed to establish a different connection with the students and use a number of distance learning and learning tools. This handbook will help all teachers better prepare for the next school year and in general for the challenges of project-based learning and distance learning. Electronic digital tools for tracking and implementing project-based and distance learning

Working remotely and learning remotely puts us in situations where we have to use different digital tools to research, collaborate and create. The tools presented in this chapter will be particularly useful for distance learning, but many of them can be used to enrich the educational process during face-to-face classroom instruction. learn. The authors of the handbook have tried to give each tool a brief example of how to use it in project-based learning. We especially emphasize that many of these tools can be used to produce the aforementioned end product of project-based learning, even during direct classroom instruction.

. In this case, they reinforce the student's digital literacy. Tools, such as eg. Slack is used for communication in all major global companies. Google Maps has practical applications in everyday life. The European Union project portal, the e-Twin platform, allows us to easily connect and work on projects with other schools and colleagues across Europe. Most of these tools are experiencing a golden age in distance learning today, but their value in both the educational process and in real life is undeniable. Google Earth and Google Maps

When studying geography, one of the most important outcomes is the ability to navigate a map or globe. Few applications are as practical and useful for these purposes as Google Earth or Google Maps. Both services work in the browser, but they also exist as mobile apps, whether they run on Android or iOS. Not only does Google Earth allow you to zoom in on different parts of the planet until



you see the street, but it can also be used as an online space for student collaboration and project-based learning. This three-dimensional representation of planet Earth, which Google touts as the most detailed globe in the world, already contains some useful tools.

- You can choose from several easily editable folder types in the sidebar menu.
- Can measure the distance between two or more points.
- There is also a quick search by name, making browsing easier.
- Google has made an effort to supplement its world with short articles and photos and

making it an interactive research tool.

- Satellite imagery used to create Google Earth allows you to zoom in on the image to that you can see famous streets, buildings and cultural monuments.

Google Earth and Google Maps allow us to create joint projects. Invite students to participate using this tool. They can present a historical battle by adding location points, photos, text and video and thus explain what happened. They can mark the birthplaces of writers, poets, artists, painters, musicians, scientists, or highlight events from the biographies of these notable people. If you want to give it a try, give them a chance to point you to their latest school trip or vacation spot. In classrooms with younger children, use Google Maps to show students the way home, mark the location of all their friends in class, or teach them to recognize areas of the city or plan a trip. a trip.

Digital tools for assessing student performance during project-based learning and distance learning

When we talked about project-based learning, we mentioned the challenges of assessment and assessment. Much of what is important in this approach is difficult to measure and rate on a one-to-five scale, which is certainly to be expected in the context of our society and education system. We propose to develop a culture of self-assessment in students, providing every opportunity to assess skill development and interdisciplinary correlation through feedback and process assessment methods, which is certainly very important. important and has recently been recognized by the Ministry of Education and other important organizations. On the other hand, we recognize that, in practice, teachers face one of the main challenges of assessment every day: how to measure what is measurable and how to explain rating? In the context of distance learning, we would like to introduce some tools that can be useful. It should be noted that,



like all the other tools we cover in the manual, these tools cannot completely replace a student's face-to-face conversation with the teacher. We believe that these tools should be used sensibly and seriously, more as an aid and certainly not as a substitute for other assessment methods. In this chapter we have also drawn attention to a number of 'alternative' instruments that measure different achievements and are developed and recognized at the European level. Various other digital tools and services (such as Štreber's website (Nerd) or the app - Vučilo - Dolina magičnih reči (Vučilo - Valley of Magic Words) indicate successful attempts to publish excellence in creating tools for our local purposes and in our language. They cover an important didactic area that is, in our opinion, somewhat neglected, which is self-esteem promotion. in students. Problem-based learning (PBL) is a student-centered method in which students learn about a topic by working in groups to solve an open-ended problem. This issue is what drives motivation and learning.

Why use problem-based learning? Nilson (2010) lists the following learning outcomes related to APP. A well-designed APP project gives students the opportunity to develop skills related to:

- Working group.
 - Manage projects and assume leadership roles.
 - Oral and written communication.
 - Self-study and assessment of the team's processes.
 - Work independently.
 - Critical thinking and analysis.
 - Explain concepts.
 - Self-directed learning.
 - Apply course content to specific examples.
 - Master research and information.
 - Solve problems in all areas.
- Considerations when using problem-based learning

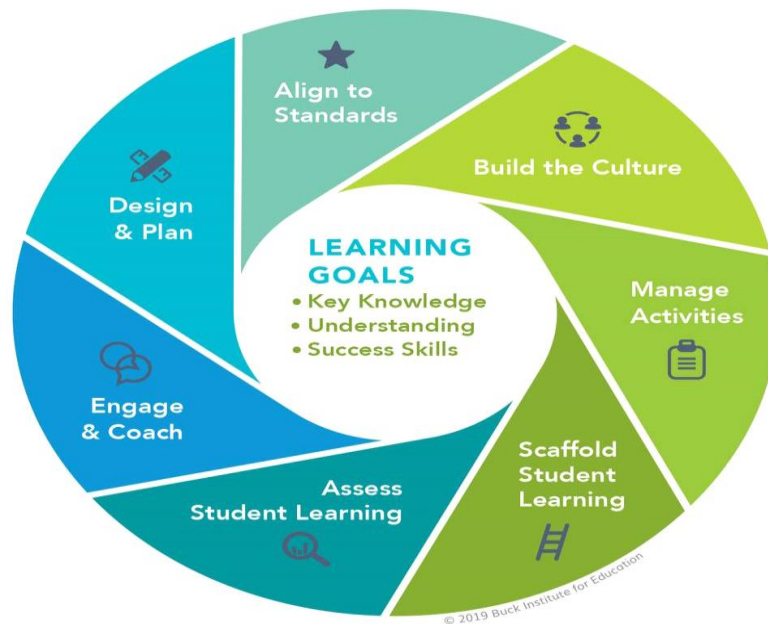
Instead of teaching relevant material and then asking students to apply the knowledge to solve a problem, the problem is presented first. PBL assignments can be short or they can be more involved and last an entire semester. PBL is often group oriented, so it is helpful to spend time in class to prepare students for teamwork and allow them to participate in their PBL project. Students in general should:

- Check and identify the problem.
- Discover what they already know about the basics related to it.
- Identify what they need to learn and where they can get the information and tools they need to solve the problem.
- Evaluate possible ways to solve the problem.
- Problem solving.
- Report on their findings.



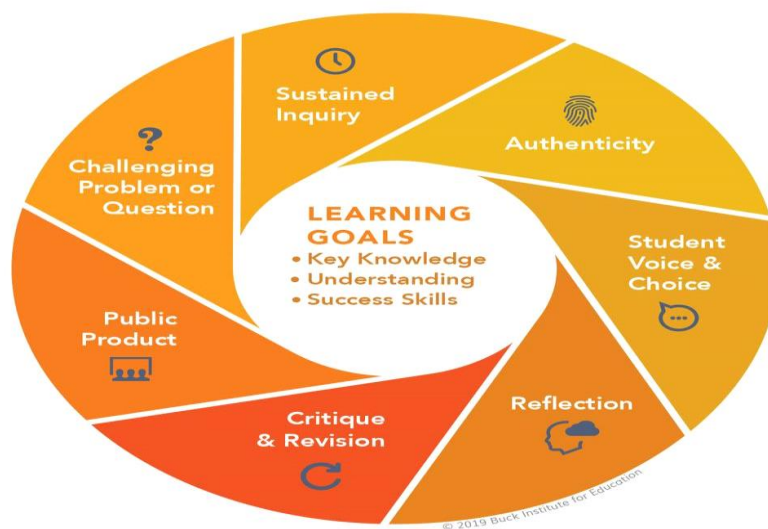
Gold Standard PBL

Seven Project Based Teaching Practices



Gold Standard PBL

Seven Essential Project Design Elements



Problem-based learning (PBL) is a teaching method in which complex real-world problems are used as a means of motivating students to learn concepts and

principles, as opposed to present facts and concepts directly. In addition to course content, PBL can promote the development of critical thinking skills, problem solving and communication skills. It can also provide opportunities for teamwork, research and literature review, and lifelong learning (Duch et al, 2001). The APP can be integrated into any learning situation. According to the strictest definition of APP, this approach is used throughout the semester as the primary teaching method. However, broader definitions and uses range from bringing PBL into the lab and design courses to using it simply to start a one-off discussion. The PBL can also be used to create review categories. The common thread connecting these disparate uses is a real-world problem. Any theme can be adapted into a PBL with a little creativity. Although core problems vary across disciplines, there are some characteristics of good PBL problems across disciplines (Duch, Groh, however, others need to be rewritten to be useful. The following instructions from The Power of Problem-Based Learning (Duch et al, 2001) are written to generate PBL problems for a method-centered classroom; however, general ideas can be applied in simpler PBL usage:

Choose a central idea, concept, or principle that is always taught in a given course, and then think of a typical end-of-chapter problem, assignment, or assignment that is typically assigned to students to help them learn the concept. that concept. State the learning goals that students need to achieve when solving problems. Think about the actual context for the concept under study. Developing a narrative aspect of a chapter-end problem, or a real-life case study that can be adapted, provides additional motivation for students to solve the problem. More complex problems will challenge students to go beyond simple plug and play to solve it. Check magazines, newspapers, and articles for story ideas. Some PBL practitioners talk to experts in the field, looking for ideas for practical applications of the concept being taught. The problem should be introduced in stages so that students can identify learning problems that will lead them to the study of the target concept. Here are some questions that can help guide this process:

What will the first page (or step) look like? What open-ended questions can we ask? What learning problems will be identified? How will the problem be structured? How long will the problem last? How many lessons will it take to complete? Will students receive the information in the following pages (or



steps) as they solve the problem? What resources will students need? What is the end product that the student will produce at the end of the problem? Write a lesson plan detailing a plan to guide the use of math problems in the subject. If the course is for medium to large classes, it may be necessary to combine small lectures, whole class discussions The teacher's guide may indicate plans or options for going through problem pages alternating different modes of learning. The final step is to identify key resources for the student. Students should learn to identify and use learning resources on their own, but it can be helpful if the instructor points to some good sources to kick them off. Many students will want to limit their research to the internet, so it is important to direct them to the library. The PBL method of allocating a problem includes three closely related teaching techniques: case studies, role plays, and simulations. Case studies are presented to students in written form. Role play asks students to improvise scenes based on certain character descriptions. Nowadays, simulation usually involves computer programs. Whichever technique is used, the core of the method remains the same: the real-wThe teacher's guide may indicate plans or options for going through problem pages alternating different modes of learning. The final step is to identify key resources for the student. Students should learn to identify and use learning resources on their own, but it can be helpful if the instructor points to some good sources to kick them off. Many students will want to limit their research to the internet, so it is important to direct them to the library. The PBL method of allocating a problem includes three closely related teaching techniques: case studies, role plays, and simulations. Case studies are presented to students in written form. Role play asks students to improvise scenes based on certain character descriptions. Nowadays, simulation usually involves computer programs. Whichever technique is used, the core of the method remains the same: the real-world problem and small group work with regular reporting. The teacher's guide may indicate plans or options for going through problem pages alternating different modes of learning. The final step is to identify key resources for the student. Students should learn to identify and use learning resources on their own, but it can be helpful if the instructor points to some good sources to kick them off. Many students will want to limit their research to the internet, so it is important to direct them to the library. The PBL method



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Problem-Based Learning (PBL) offers you a different way of learning from traditional higher education. You work in small tutoring groups, participate in hands-on training, and attend (fewer) conferences. Under the supervision of a tutor, you team up with ten to fifteen students to take on real challenges. APP is an active learning method that allows you to better retain knowledge, boost your motivation and encourage you to develop the skills you need for the 21st century job market. In a nutshell: PBL is it's all about you, your tutors are approachable and you learn together dynamically, which makes you a confident professional. So what are these "life skills"? Research shows that PBL teaches you:

really understand the topic, rather than memorize it
collaborate with partners and small groups

Think critically to solve problems
study and work independently

feel comfortable speaking in front of a crowd

Students have the opportunity to learn how to conduct research and gain substantive knowledge by doing research. By participating in a research project, you will learn about research processes, research methods and dissemination of research results, as well as in-depth background knowledge.

The project begins with group meetings where you explore topics and methods under the guidance of a supervisor. As the project progresses, the focus will shift more to your own research as you develop the outlines for your own research project. Throughout your research, you will have the opportunity to share your experiences with other students on your project team, discuss research progress and the challenges you are facing, and provide and receive feedback on proposals, drafts, and presentations. The projects are supervised by researchers, who will guide and support you as you explore the substantive topic and develop



your own research project. Project teams typically have between 5 and 12 participants.

You study relevant cases, which have meaning in today's society – whether these are simulations from professional practice, debated topics within scientific communities, or other problems that require an academic approach. Being confronted with such problems, you learn how to tackle a wide variety of topics, as well as how to make the all-important transfer from theory to practice.

Problem-based learning can be applied to any school subject, from social studies and literature to mathematics and science. No matter the field, a good problem-based learning approach should embody features like:

- Challenging students to understand classroom concepts on a deeper level.
- Pushing students to make decisions they're able to defend.
- Clearly connecting current course objectives to previous courses and knowledge.
- Encouraging students to work as a group to solve the complex issue at hand.
- Engaging students to solve an open-ended problem in multiple complex stages.

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