A METHODOLOGICAL FRAMEWORK FOR ENHANCING HIGHER-ORDER COGNITIVE COMPETENCIES IN HIGHER EDUCATION THROUGH PROBLEM-BASED LEARNING (PBL)

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Abstract: In today's world, it is not enough for university students to just memorize facts and pass exams. They need to learn how to think for themselves, analyze information, and solve difficult problems. This article looks at how we can help students develop "Higher-Order Cognitive Competencies"—which simply means the ability to think deeply and critically.

The best way to do this is through a method called Problem-Based Learning (PBL). Instead of listening to a long lecture, students are given a real-life problem to solve. This article explains a simple 5-step process that teachers can use to change their classrooms. In this model, the teacher acts like a coach or a guide, and the students work in groups to find solutions. We describe how to create these problems and how to support students as they learn to work independently. The goal of this paper is to show that when we change how we teach, students become much more active, confident, and ready for their future careers.

Keywords: Higher education, university students, Problem-Based Learning (PBL), simple teaching methods, thinking skills, critical thinking, solving problems, group work, student-centered learning, classroom activities, 21st-century skills, teaching guide

Introduction

In today's universities, the way we teach is changing. In the past, students mostly sat in classrooms, listened to teachers, and memorized facts. However, in the modern world, knowing facts is not enough. Students need what we call "Higher-Order Cognitive Competencies" (HOC). This is a big name for a simple idea: the ability to analyze information, evaluate different points of view, and create new solutions to problems.

According to theories like Bloom's Taxonomy, learning has different levels. The lower levels are just remembering and understanding. But the higher levels—which this article focuses on—are about using that knowledge in real life. If students only learn to memorize, they will struggle when they start their professional careers.

So, how can we help students think more deeply? One of the best methods is Problem-Based Learning (PBL). Instead of a teacher giving all the answers, PBL starts with a "problem." Students have to work together, ask questions, and do their own research to find a solution.

The goal of this article is to explain a clear method for using PBL in the classroom. We will look at how teachers can design good problems and how they can guide students without just giving them the answers. By using this method, we want to help students become independent thinkers who are ready for the challenges of the 21st century.

In this method, the teacher's job is different. The teacher is not a "boss" who gives all the answers. Instead, the teacher acts like a coach. The teacher asks questions like, "Why do you think so?" or "Where can you find proof for that?" This helps students to think for themselves.

Designing the Lessons

We created special lesson plans for this study. Every lesson was built around a "challenge." For example, instead of teaching a rule, we gave a situation where the rule had to be applied to solve a problem. This made the students

Methods

In this section, we explain how the teaching was organized and what steps were followed to help students think better.

The 5-Step Teaching Process

We used a special 5-step cycle to teach the students. Instead of just giving a lecture, we followed this path:

Meeting the Problem: We gave students a real-life situation that was difficult to solve.

Talking it Over: Students sat in small groups and discussed what they already knew and what they needed to learn.

Independent Study: Students went to the library or used the internet to find information on their own.

Creating a Solution: The groups met again, shared their research, and tried to find the best way to solve the problem.

Reviewing the Work: Finally, students looked back at their work to see what they learned and how they could do better next time.

Changing the Role of the Teacher

use their "Higher-Order" skills like analysis and evaluation.

Working in Groups

Students did not work alone. They worked in teams. This is important because when students talk to each other, they hear different ideas and learn how to argue their points in a polite and logical way.

Results

The results of our study showed a clear improvement in how students think and learn. Before we started the Problem-Based Learning (PBL) lessons, we tested the students to see their starting level. At the beginning, most students were only using basic memory and struggled to analyze complex ideas. Only about 20% of the students could be described as having high-level thinking skills. Many felt uncertain when they were given a problem without a simple, ready-made answer.

However, after 8 weeks of using the PBL method, the data changed significantly. When we tested the students again at the end of the experiment, the number of students in the "High Level" group grew from 20% to nearly 50%. This means that almost half of the class learned how to evaluate information and create their own solutions effectively. In the control group, where students continued with traditional lectures, there was very little change in their thinking levels.

We also noticed that students became much more active in the classroom. In the beginning, they waited for the teacher to tell them what to do. By the end, they were leading the discussions and asking deep questions. They were able to connect different ideas together and defend their opinions with logic. The results prove that when students are given the freedom to solve problems, their brain works harder, and they develop the "Higher-Order" skills that they will need in their future jobs.

Discussion

The results of this study clearly show that Problem-Based Learning (PBL) is a very powerful tool for helping students think more deeply. The main reason for this success is that PBL changes the way students feel about learning. Instead of just sitting and listening, they become the "owners" of the problem. When students have to find their own answers, they remember the information much longer and learn how to use it in real life.

One of the most important things we noticed was the growth in student confidence. At the start, many students were afraid of making mistakes. But because PBL focuses on the process of finding a solution rather than just having one "right" answer, students felt more comfortable sharing their ideas. They learned that analyzing and evaluating different options is more important than just memorizing a textbook.

However, using this method is not always easy. It requires more work from the teacher to design good problems, and students need time to get used to this new way of learning. But the benefits are worth it. Our study shows that if we want to prepare students for the modern world, we must move away from old teaching styles. By using PBL, we can help students develop the skills they need to be successful, independent, and creative thinkers.

In conclusion, this methodology provides a simple but effective path for universities. If we give students the right problems to solve and the right support, they will develop the high-level cognitive skills that are so important in today's society.

Conclusion

To sum up, this article shows that teaching students how to think is just as important as teaching them what to know. Higher-Order Cognitive Competencies, like analysis and problem-solving, are the keys to success in today's world. Our research proves that Problem-Based Learning (PBL) is an excellent way to help students develop these skills.

By using the 5-step method we described—starting with a real problem and letting students lead the way—we saw a huge jump in student performance. The number of students who could think critically more than doubled. More importantly, students stopped being passive listeners and became active, confident learners.

We recommend that more universities use this method. It might take more time to prepare, but it turns the classroom into a place of discovery. When we stop giving students all the answers and instead give them the right problems, we prepare them for the real world. This is the best way to make sure our students are ready for their future careers and lives.

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