

# Applying active teaching methods in university education

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**Abstract:** *This article examines active teaching methods in higher education, focusing on their benefits, challenges, and theoretical foundations. Approaches like project-based, collaborative, and problem-solving learning enhance students' critical thinking, creativity, and teamwork skills. The study explores the pedagogical theories supporting these methods and offers practical recommendations to overcome the identified challenges. By implementing these strategies, higher education institutions can create more engaging and effective learning environments, ultimately improving educational outcomes and better preparing students for collaborative and innovative careers.*

**Keywords:** *Active teaching methods, higher education, critical thinking, collaborative learning, project-based learning.*

## 1. Introduction

In the context of globalization and technological advancement, higher education is facing new demands for teaching quality and methods. One key trend is the adoption of active teaching methods, which encourage students' active participation and develop critical thinking, creativity, and teamwork skills. Methods like project-based learning, collaborative learning, and experiential learning have proven effective in enhancing students' problem-solving abilities and self-learning skills. However, the implementation of these methods in higher education presents challenges, such as a lack of teacher training, resistance from students, and limitations in infrastructure and technology. Moreover, there is a need for institutional support and adequate resources to sustain these innovative approaches. Therefore, studying these methods and providing recommendations for improving their application is essential. Addressing these challenges through comprehensive strategies can lead to more effective and adaptable educational systems, ultimately better preparing students for the complexities of the modern world.

## 2. Results

### 2.1. Definition of active teaching methods

According to Bonwell and Eison (1991), active learning is a method where students are not passive recipients of information, but engage in activities such as discussions, group work, and problem-solving, which require them to apply higher-order

thinking skills. The goal is to move away from traditional lecture-based teaching to methods that engage students more interactively. Active learning as "anything that involves students in doing things and thinking about what they are doing" [1]. Furthermore, Prince (2004) states that "active learning encourages students to take responsibility for their learning, and it fosters higher levels of engagement and retention of knowledge", which ultimately leads to more meaningful and lasting learning outcomes [3]. In summary, active teaching methods help students to be more involved in their learning process, equipping them with critical thinking, problem-solving, and collaborative skills that are crucial in both academic and real-world contexts.

### 2.2. Benefits of active teaching methods

*First*, increased student engagement. Active teaching methods shift the focus from passive listening to active participation, which motivates students to take a more active role in their learning. Active learning increased student engagement and performance, particularly in STEM disciplines, by encouraging students to engage in activities such as group discussions and problem-solving [2].

*Second*, improved knowledge retention and deeper learning. Through activities such as collaborative tasks and problem-solving exercises, students apply theoretical knowledge to real-world situations, fostering deeper understanding. Active learning promotes deeper understanding and better retention of knowledge by involving students in

tasks that require them to synthesize, apply, and analyze information [3].

*Third*, development of critical thinking and problem-solving skills. Active teaching methods encourage students to engage in higher-order thinking, where they must analyze, evaluate, and create rather than just recall facts. Active learning not only improves engagement but also equips students with skills that are directly applicable to real-world challenges.

*Fourth*, enhanced collaboration and communication skills. Many active learning methods, such as group projects and peer feedback, emphasize teamwork. Students work together to solve problems, improving their communication and collaboration skills.

*Fifth*, better preparation for real-world applications. Active learning methods mimic real-world situations, where students must solve complex problems, collaborate with others, and apply their knowledge in practical scenarios [4]. This prepares students for the challenges they will face in their careers.

### **2.3. Key learning theories supporting active teaching methods**

Active teaching methods are grounded in several influential learning theories. Piaget's Theory of Cognitive Development posits that learners actively build knowledge through experiences, making activities and problem-solving key to fostering critical thinking. Vygotsky's Sociocultural Theory underscores the importance of social interaction, particularly through collaborative activities within the Zone of Proximal Development (ZPD), which promotes cognitive growth. Kolb's Experiential Learning Theory emphasizes the value of real-world experiences, reflection, and application, aligning with project-based learning strategies. Gardner's Theory of Multiple Intelligences advocates for diverse methods, like group work and projects, that cater to learners' varying strengths and intelligences. Finally, Bandura's Social Learning Theory suggests that learners acquire skills through observation, making role-playing and real-life scenarios effective tools for imitating and learning from others.

### **2.4. Challenges and difficulties in implementing active teaching methods in university education**

*First*, resistance to change. A primary challenge in implementing active teaching methods is resistance from both instructors and students. Educators often

prefer traditional lecture-based approaches and may hesitate to adopt student-centered strategies. Similarly, students may favor passive learning due to its familiarity and ease. Overcoming this resistance requires transitioning to more active learning environments.

*Second*, lack of training and professional development for instructors. Effective implementation of active teaching methods requires instructors to understand active learning strategies and manage an interactive classroom. Many university instructors may not have received adequate training in these methods, leading to difficulties in adapting their teaching styles.

*Third*, insufficient resources and support. Active teaching methods often require additional resources, such as teaching materials, technology, and space for group work or interactive activities. Many universities may face constraints in infrastructure, technology, or access to up-to-date learning materials. Without support, it can be difficult for instructors to implement active learning strategies effectively.

*Fourth*, large class sizes, especially in introductory university courses, make it challenging to implement active learning methods that require significant student interaction. Instructors find it difficult to manage group activities, facilitate discussions, and provide individual attention in crowded classrooms, resulting in less effective active teaching.

*Fifth*, assessment and grading difficulties arise because traditional exams and assignments do not align with active teaching's focus on continuous learning and skill development. Educators find it challenging to design fair and reliable assessments that effectively measure collaboration, problem-solving, and critical thinking skills.

*Sixth*, time constraints arise because active learning requires more preparation and execution time compared to traditional methods. Instructors with multiple courses or heavy workloads may find it challenging to plan interactive activities, provide feedback, and manage classroom dynamics, thereby hindering the implementation of active teaching.

*Seventh*, varying student motivation and participation present challenges, as not all students are equally motivated to engage in active learning activities. Some may feel uncomfortable with group work, discussions, or problem-solving tasks, which can reduce the effectiveness of active teaching methods. Building a supportive classroom culture

is essential to encourage participation and support struggling students.

### 2.5. Recommendations for enhancing the effectiveness of active teaching methods in university education

*First*, overcome resistance to change by fostering a culture of continuous improvement. Encourage both instructors and students to embrace active learning through workshops, seminars, and professional development programs that highlight the benefits of active teaching methods. Student orientation programs can also help them understand how active learning enhances performance and critical thinking.

*Second*, provide adequate training and support for instructors. Ensure educators have the necessary skills and knowledge by offering training on designing and delivering active learning activities, classroom management, and using educational technology effectively. Professional development opportunities are crucial for instructors to become proficient in active teaching strategies.

*Third*, ensure sufficient resources and support. Invest in infrastructure such as interactive classroom spaces, updated learning materials, and access to educational technology. Additionally, support instructors with teaching assistants or technology specialists to facilitate the effective implementation of active teaching methods. Furthermore, allocating budget for ongoing maintenance and upgrades of educational tools ensures that active learning environments remain effective and up-to-date. Providing dedicated technical support can also help instructors seamlessly integrate new technologies into their teaching practices.

*Fourth*, manage large class sizes effectively. Universities can adopt a blended learning approach, combining in-person and online activities to efficiently handle large classes while promoting active participation. Additionally, implementing flipped classroom techniques allows students to review materials before class, freeing up time for interactive discussions and group work.

*Fifth*, developing appropriate assessment methods. Traditional assessments should be adapted to align with active learning objectives. Instructors should design evaluations that measure collaboration, problem-solving, and critical thinking skills. Utilizing project-based assessments, peer evaluations, and reflective journals can provide more accurate feedback on student engagement and learning progress.

*Sixth*, addressing time constraints. Instructors can overcome time limitations by carefully planning and organizing activities into smaller segments instead of lengthy sessions. Collaborating with colleagues to share resources and teaching materials can also reduce individual preparation time and enhance the efficiency of implementing active teaching methods.

*Seventh*, increasing student motivation and participation. To boost engagement, instructors should create a supportive classroom environment that encourages participation through diverse teaching methods, fosters a sense of ownership, and provides positive reinforcement. Incorporating group work, peer feedback, and collaborative projects can enhance motivation and develop students' teamwork and communication skills.

### 3. Conclusion

Active teaching methods significantly enhance university education by fostering critical thinking, problem-solving, and collaboration among students. Effective implementation of these methods prepares graduates better for workforce demands and future challenges. Moreover, embracing these innovative approaches cultivates a more resilient and adaptable educational framework, ensuring that institutions remain at the forefront of academic excellence. By prioritizing active learning, universities not only elevate their educational standards but also empower students to thrive in an ever-evolving global landscape.

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