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THE RESULTS OF IMPLEMENTING PEER INSTRUCTION AS AN ACTIVE LEARNING STRATEGY

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ABSTRACT

In recent times, there has been a shift away from traditional teacher-centered teaching methods in all levels of education, particularly in universities. Students are now actively engaged in lessons, with teachers taking on a guiding role. This shift necessitates that teachers become proficient in innovative teaching techniques to enhance their effectiveness. As such, our study focused on the impact of active learning methods on students' motivation and learning outcomes, specifically in seminar classes. The article begins by discussing the theoretical underpinnings of teaching methods and active learning approaches. The research section outlines a plan to implement a history seminar using the Peer Instruction active learning method with students in the Inner Mongolia Autonomous Region of China, followed by an analysis of the results obtained from this teaching approach.

KEYWORDS

Teaching Methods, Active Learning, Peer Instruction, Student Engagement and Participation

CITATION

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Introduction.

1. Teaching method

A teaching method is a set of actions that reflect the approach to achieving learning goals and understanding and transforming reality. It involves a collaborative effort between teachers and students to acquire knowledge, skills, and experiences related to a specific subject matter. While teaching methods were initially focused on the teacher's role in the late 19th and early 20th centuries, they are now recognized as encompassing both the teacher's and student's activities.

Teaching methods are multifaceted and should be chosen based on the lesson content and learning environment to ensure student engagement, practical application, and motivation to learn.

Researcher M. Delgerjav emphasized the importance of collaboration between educators and students, highlighting the various forms of joint activities that can be undertaken. Similarly, researcher Ts. Baasandorj discussed the interconnected set of methods and actions employed by teachers and students. Researcher Sh. Ichinhorloo defined a teaching method as a combination of teaching and learning strategies, emphasizing the interconnected nature of actions between teachers and students in the teaching process.

Researcher M. Delgerjav emphasized the importance of considering various factors when selecting a teaching method, such as the age and mental characteristics of the students, the subject's characteristics, the timing, and the teacher's skills. On the other hand, researcher Ts. Baasandorj highlighted that the choice of teaching method should also take into account the purpose and content of the subject, the learning environment (especially the material environment), the students' level of knowledge, active participation, and preferred learning methods, as well as the students' age and class characteristics.

Teaching methods can be categorized into two main types: active and passive. Passive methods involve the teacher transferring knowledge to students who are passive listeners, while active methods encourage student participation and engagement in the learning process, allowing them to create their own knowledge.

2. Active learning methods and their characteristics

Scholars suggest that the concept of active learning methods was initially introduced by the English researcher R.W. Revans.

The definition provided by researchers Bonwell and Eison is considered the most suitable. They define active learning methods as "the process of engaging students in activities that require them to think about and reflect on their actions."

They also determined that active learning methods are characterized by the following:

- ✓ Students participate in activities beyond passive listening.
- ✓ The focus is on skill development rather than just information transmission.
- ✓ Students engage in higher-order thinking like analysis and synthesis.
- ✓ Activities include debating, writing, and reading.
- ✓ Students are encouraged to explore their own values.

Therefore, researcher D. Veltman concluded that to determine if a course is utilizing active learning methods, it is important to assess whether the student is actively engaged in listening and participating in an activity. Active learning encompasses any task that requires students to actively engage in thinking about and doing something, such as reading, writing, discussing, evaluating, drawing conclusions, and solving problems.

Today's students prefer not to sit still for extended periods, dislike lengthy lectures, are unenthusiastic about homework, and are keen on utilizing modern technology - such as social networks. They seek collaborative learning opportunities and value opportunities for independent creation. Therefore, it is essential to implement teaching approaches that align with these preferences. Recognizing that student engagement in learning activities is crucial, educators must introduce methods that actively involve students in order to achieve desired learning outcomes. The core principle of active learning is that teachers support students in their learning journey.

In 2014, American researchers Freeman and colleagues conducted a study comparing 225 courses to assess the importance and effectiveness of active learning methods. They analyzed test scores and student errors from 158 courses utilizing active learning techniques and 67 courses using traditional methods. The findings revealed that students in the active learning group made significantly fewer errors compared to those in the traditional learning group, indicating that active learning methods positively impact learning engagement and student motivation.

Research on human cognition indicates that individuals remember 5% of what they hear, 10% of what they read, 20% of what they see, 30% of what they see and hear, 50% of what they discuss, 75% of what they do, and 90% of what they teach others. This data, analyzed by the National Learning Laboratory Institute, underscores the different levels of effectiveness associated with each learning approach. Active learning strategies demonstrate greater retention rates compared to passive methods.

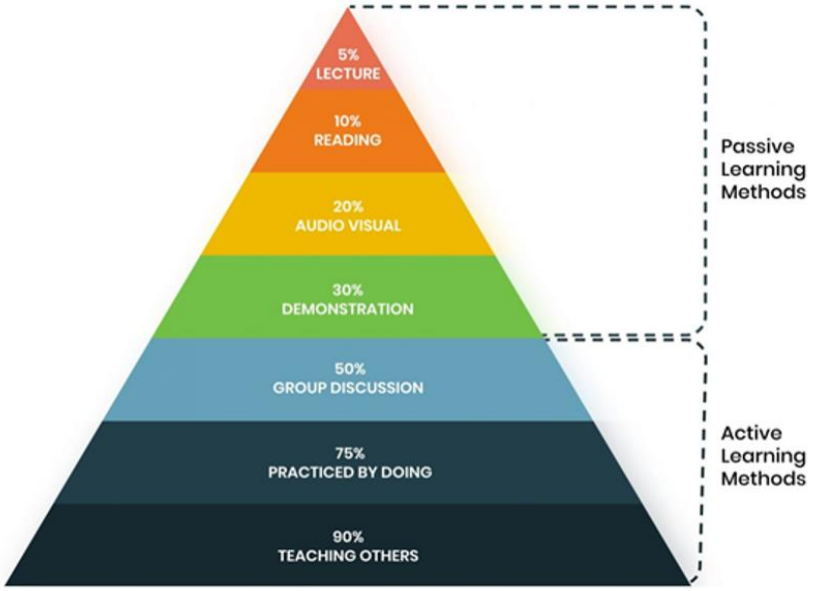

Fig. 1. *The learning Pyramid*

Adapted From National Training Laboratories, Bethel, Maine

Utilizing a variety of methods tailored to the curriculum context enhances retention. Active learning strategies include:

- ✓ Case-based learning: utilizing real-life scenarios and examples.
- ✓ Challenge-based learning (CBL): collaborative problem-solving to tackle real-world challenges.
- ✓ Problem-based learning: applying learned information to solve future problems.
- ✓ Project-based learning: developing teamwork, communication, critical thinking, and research skills through project assignments.
- ✓ Situational/story-based learning: navigating through complex problems to find solutions.
- ✓ Context-based learning: learning in a specific environment under teacher guidance to correct errors.
- ✓ Experiential Learning: hands-on learning through experimentation and practical application.
- ✓ Games & Simulation: incorporating game elements to engage students in the learning process.

There are various teaching methods available, which can be classified in different ways. One such method is Peer Instruction, which is a student-centered approach supported by evidence. It enables active teaching and learning of extensive content, irrespective of class size. This method emphasizes student engagement, discussion, and problem-solving skills, making it a highly effective way to inspire student motivation. Originally created by Harvard University professor Eric Mazur, Peer Instruction is now widely used in classrooms ranging from large lectures to small seminars.

Peer instruction is implemented in the lesson as follows in terms of structure:

1. Prior to the lesson, students are informed about the topic to be covered in the upcoming class and provided with reading materials.
2. Upon arrival at the lesson, students will have prepared for the topic, and the teacher will introduce the lesson content.
3. The teacher will pose questions to the students related to the topic in the form of a concept test or a test with 3-4 options. The responses chosen by the students will be tallied and shared with the class.
4. Subsequently, each answer will be deliberated and discussed in small groups, with students who selected or understood the correct answer explaining it to their peers to help consolidate understanding. They will also present their rationale and arguments for selecting that particular answer.
5. Following this, the teacher will administer another concept test.

Based on the test results, the subsequent course of action will be determined. If only 30% of the students answered correctly, the teacher will provide a detailed explanation of the topic once more. If the correct responses range from more than 30% to 70% of the students, a small group discussion will be conducted. In the event that over 70% of the students answered correctly, the teacher may proceed to the next topic. The teacher will ensure clear and concise explanations to justify the correct answers during the discussion.

CBE Life Science Education has created a template to assist teachers in implementing Peer Instruction, which can also be beneficial for researchers who are new to the field.

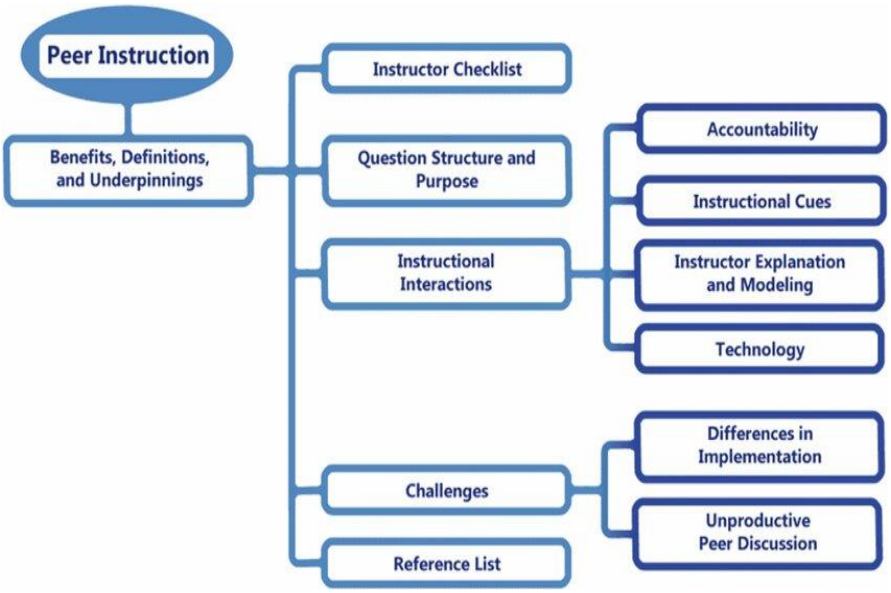

Fig. 2. *The guide has several features intended to help instructors: a landing page that indicates starting points for instructors*

Cite this guide: Knight JK, Brame CJ. (2018) Evidence Based Teaching Guide: Peer Instruction. CBE Life Science Education. Retrieved from http://lse.ascb.org/evidence-based-teaching-guides/peer-instruction/

3. Implementing peer instruction, an interactive teaching approach, in seminar sessions

3.1 Seminar Lesson Plan:

As part of the Results of the 2024 construction of the Local Universities reform and development Fund (Scientific construction) project supported by the Department of Education of the Inner Mongolia Autonomous Region of China, a study was conducted on the "Study on the Use of Active Learning Methods in Organizing Seminars and Their Impact on Students". This study focused on the "Mongolian History" course, a mandatory course in the curriculum.

The history seminar course has a large number of students, many of whom have low learning motivation. Due to the extensive content of the course, traditional methods like think-pair-share and jigsaw are not feasible within the 1 hour and 30 minutes of the lesson. Peer instruction was chosen as the primary active learning method.

The teaching method is divided into three phases:

Phase 1: Pre-lesson

Phase 2: In-lesson

Phase 3: Post-lesson

Course Name: History of Mongolia

Topic: Knowledge, culture, and writing of the Mongols in the 13th century

Teaching Method: Peer Instruction

Course Content and Objectives: The Mongols' knowledge was closely tied to their nomadic lifestyle and animal husbandry practices. Through generations of herding, they developed various techniques, practical knowledge, and healing methods. During the Great Mongol Empire, writing became an essential part of Mongolian society, with the use of scripts inherited from the Uyghur period.

The earliest known Mongolian writing is the "Genghis Khan Stone Writing." In 1269, Kublai Khan ordered the creation of a square script based on the Tibetan script, but it was not widely adopted. Important legal and historical works, such as the "Ikh sagas," "Golden Notebook," "Great Book," and "Mongolian Secret Book," were written in Mongolian script. Oral literature also flourished with works like "Esen Urlogtei Orchin Bovguunii Tsetselsen Shashdir," "Er Duyok Zagal," and "Argasun Khuurchiin Domog" being produced during this time.

Learning Outcomes: Through engagement in this lecture, students will gain the ability to recognize the Mongolian way of life, expertise in herding, governmental and legal systems, the literary culture and writing techniques prevalent during that era, as well as understand the evolution, culture, and lifestyle of the period.

Teaching methodology and course progression: The lecture will cover the evolution of knowledge, science, and culture from ancient times to the present. It will explore the dissemination and adherence to laws, the creation of literary and cultural works, and provide examples of their nomenclature, distinctions, and chronological order. By the end of the lecture, students will have a comprehensive understanding of the lifestyle of 13th-century Mongolians, including their herding practices, knowledge, literature, and systems of law and order.

Pre-Lesson: Prior to teaching the topic, the teacher will conduct a week-long seminar to guide students on reading and study resources. The teacher will have uploaded presentations and videos for the lesson online and prepared a set of questions on the main issues to be covered that day.

1. History of Mongolian writing
2. Legal texts and historical works
3. Literature and oral tradition
4. Nomadic herding and cultural relations

These questions seek to explore various aspects of Mongolian writing, including its historical development, legal and historical texts, literary traditions, and the influence of nomadic herding on cultural relations.

In-Lesson: The teacher will engage students with questions at the beginning and middle of the lesson to assess their existing knowledge and identify areas where they may need more information. Students will have the opportunity to select different answers to the questions, share their responses, collaborate to understand each other's perspectives, and come to a consensus. Throughout the lesson, students will work in

small groups to facilitate peer learning, enabling them to exchange ideas and benefit from diverse viewpoints. Following the group activity, all students will revisit the initial question, compare and discuss their answers, and reflect on any misconceptions or correct responses. They will engage in dialogue with their peers to gain a shared understanding and draw conclusions. The teacher will provide guidance and explanations for the correct answer, addressing any misunderstandings and promoting learning progress.

***Post-lesson*:** Incorporating collaborative learning techniques into the lesson will encourage active student engagement. By sharing their ideas and knowledge, students can enhance their understanding and solidify their own learning. A key aspect of participation is the opportunity for students to learn collectively.

3.2. Findings of the investigation on students' learning engagement

The study employed peer instruction in seminar sessions to enhance students' learning engagement and impact their involvement in learning through practical experiments and research, with a particular focus on analysis.

A mixed-method approach, incorporating both qualitative and quantitative research techniques, was utilized in the study. A total of 64 students (28 female, 36 male) enrolled in the "Mongolian History" course took part in the research.

Comparison of post-test scores between the control and experimental groups

1. The study randomly assigned participants to either the experimental or control group. The attitude scale showed a slight difference in attitudes towards Mongolian history between the two groups.
2. Post-test analysis revealed a significant difference in favor of the experimental group or between the groups. This suggests that the experimental group's knowledge level on the topic "Knowledge, Literature, and Culture of the 13th Century Mongols" after the test is higher than that of the control group.

The study included semi-structured interviews with 11 student volunteers from the experimental group who participated in Peer Instruction. The responses were examined and the most commonly shared views were analyzed thematically.

1. The lesson became more fun and the interest in participating in the lesson increased.
2. Students actively expressed their opinions.
3. They reinforced what they had learned.
4. They were interested in working in a team
5. The use of peer instruction had a positive effect on the lesson process.

Conclusions

Based on the study findings, it was evident that intrinsic factors had a greater impact on learning motivation compared to organizing seminars with active learning methods. Positive outcomes included increased class participation, open discussions, and confident expression of opinions. Consequently, the study draws the following conclusions:

1. Researchers tend to endorse the idea of defining learning methods as a collaborative effort between teachers and students, encompassing both teaching and learning activities.
2. When choosing a teaching method based on learning concepts and research recommendations, it is important to consider its suitability for the course content and learning environment, student engagement, practicality, and impact on student activity and motivation.
3. When student engagement is expected to be low, active learning methods have been shown to have a beneficial impact by actively involving students in the learning process.
4. Peer instruction is an ideal approach for courses with extensive content, high student participation, and students who may not be actively engaged in learning. This method not only helps activate students but is versatile and can be applied regardless of class size.

An effective teaching method incorporates learning theories and principles, emphasizes "learning by doing," fosters student growth and development, empowers students, and encourages critical thinking and reasoning skills.

The effectiveness of a method depends on how well it is implemented in specific activities and contexts. It is crucial to recognize that a method that may not work well in one learning environment could be highly successful in another.

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