Active Learning Strategies Guide

Active learning engages students directly in their learning journey, fostering critical thinking and active participation. This guide presents a variety of strategies, each with a concise explanation, practical example, and an indication of whether it is suitable for large classrooms. Use this resource to select and implement active learning techniques that align with your teaching style and course objectives, ensuring effectiveness in both small seminars and large lecture settings. If you need further assistance or guidance on how to apply these strategies, please contact the Faculty Development Unit (FDU) for support.

Think-Pair-Share

How it Works: Students first think individually about a question or problem, then pair up to discuss their thoughts before sharing with the larger class.

Example: In a biology course, students might be asked to think about the ethical implications of genetic modification. They discuss with a partner before sharing their ideas with the class.

Suitable for Large Classrooms: Yes

Case Studies

How it Works: Students analyze real-life or hypothetical scenarios to apply theoretical knowledge to practical situations.

Example: In a business class, students might analyze a case study on a company's marketing strategy, discussing what worked, what didn't, and how they might have approached it differently.

Suitable for Large Classrooms: No

Problem-Based Learning (PBL)

How it Works: Students learn by engaging in a complex, real-world problem that requires them to research, collaborate, and apply their knowledge to find a solution. This method encourages critical thinking, problem-solving, and the application of theoretical concepts to practical challenges.

Example: In a civil engineering course, students are tasked with designing a sustainable water filtration system for a community with limited access to clean water. They must consider factors such as local resources, environmental impact, cost, and maintenance. Working in teams, students research different filtration methods, develop prototypes, and present their proposed solutions to the class, receiving feedback from both peers and the instructor.

Suitable for Large Classrooms: No

Interactive Lectures

How it Works: Lectures are interspersed with short activities where students can discuss or apply what they've just learned.

Example: During a lecture on constitutional law, the instructor pauses to present a landmark Supreme Court case. Students are asked to read a brief excerpt from the case and then discuss in pairs or small groups whether they agree with the Court's reasoning. After the discussion, students share their thoughts with the entire class, and the instructor leads a debrief on the legal principles involved.

Suitable for Large Classrooms: Yes

Peer Teaching

How it Works: Students teach a concept or topic to their peers, which reinforces their own understanding and fosters collaborative learning.

Example: In a pharmacology course, students are assigned specific drugs or drug classes (e.g., antibiotics, antihypertensives). Each student or group researches the mechanism of action, therapeutic uses, side effects, and contraindications of their assigned drug. They then present this information to their peers, using diagrams and case studies to illustrate key points.

Suitable for Large Classrooms: No

Role-Playing

How it Works: Students assume the roles of different characters or stakeholders in a scenario to explore different perspectives.

Example: In a law class, students could role-play as defense attorneys, prosecutors, and judges in a mock trial.

Suitable for Large Classrooms: No

Jigsaw

How it Works: Students are divided into groups, with each group responsible for learning and teaching a different section of the material.

Example: In an organic chemistry course, students are divided into groups, with each group assigned a different organic reaction mechanism (e.g., substitution, elimination, addition, and oxidation-reduction). Each group studies their mechanism in detail, including the steps involved, reaction conditions, and examples. They then reorganize into new groups, where each member teaches their assigned mechanism to the others, helping all students grasp the various reaction mechanisms in organic chemistry.

Suitable for Large Classrooms: No

Concept Mapping

How it Works: Students create visual representations of the relationships between concepts, which helps them organize and integrate knowledge.

Example: In a chemistry course, students create a concept map to visualize the relationships between different types of chemical bonds (ionic, covalent, and metallic) and how these bonds affect the properties of compounds.

Suitable for Large Classrooms: No

Debates

How it Works: Students engage in structured debates on a controversial topic, which helps them develop critical thinking and persuasive communication skills.

Example: In a political science course, students might debate the pros and cons of a particular government policy.

Suitable for Large Classrooms: Yes

Brainstorming

How it Works: Students generate a wide range of ideas or solutions related to a topic or issue quickly and creatively, often in groups, without immediate evaluation or judgment.

Example: In a law class, students brainstorm potential legal claims a plaintiff could make in a hypothetical product liability case, such as negligence or breach of warranty. The instructor then guides the class in evaluating which claims are most viable.

Suitable for Large Classrooms: yes

Flipped Classroom

How it Works: Students watch lectures or read material at home, then spend class time engaged in activities that deepen their understanding of the content.

Example: In a mathematics course, students could watch a lecture on solving quadratic equations at home and then work on problem sets in class with the professor's guidance.

Suitable for Large Classrooms: Yes

Minute Paper

How it Works: Students write a brief response to a question or summarize what they learned in the last few minutes of class, which helps reinforce their understanding.

Example: In a mechanical engineering course, after a lecture on gear design, students write a brief explanation of how gear ratios affect the performance of mechanical systems. This allows the instructor to assess students' grasp of key design principles.

Suitable for Large Classrooms: Yes

Peer Review

How it Works: Students evaluate each other's work, providing constructive feedback that helps improve the quality and clarity of their peers' work. This process encourages critical thinking and collaborative learning.

Example: In a legal writing class, students draft a brief legal argument and exchange it with a peer for feedback on clarity, logic, and use of legal precedents. They discuss the feedback and revise their drafts accordingly.

Suitable for Large Classrooms: Yes

Fishbowl

How it Works: A small group of students discuss a topic in the center of the room (the "fishbowl"), while the rest of the class observes and then reflects on the discussion.

Example: In an ethics course, a small group could discuss the moral implications of artificial intelligence while the rest of the class observes and later joins the discussion.

Suitable for Large Classrooms: Yes

Ask an Expert

How it Works: Students engage with an expert in the field, who answers questions and provides insights on a specific topic. This interaction connects theoretical knowledge with practical experience.

Example: After a lecture on chemical reaction mechanisms, the instructor invites a professional chemist from the pharmaceutical industry to discuss how these mechanisms are applied in drug development. Students prepare questions in advance and engage in a Q&A session, gaining insights into real-world applications of the concepts they've learned in class.

Suitable for Large Classrooms: Yes

Gallery Walk

How it Works: Students walk around the classroom or a designated area, viewing and interacting with different displays of work or information set up by their peers.

Example: In an engineering course, students prepare presentations or displays on various sustainable engineering solutions, such as green building materials, water purification systems, or renewable energy sources. During the gallery walk, peers visit each station, engage with the material, and discuss the sustainability and practicality of each solution.

Suitable for Large Classrooms: No

Muddiest Point

How it Works: Students identify the most confusing or unclear part of a lesson or reading. This feedback helps the instructor pinpoint areas that need further explanation and clarification.

Example: At the end of a lecture on pharmacokinetics, students are asked to write down the concept they found most difficult to understand, such as the calculation of drug half-life or the interpretation of a drug's area under the curve (AUC). The instructor collects these responses and addresses the most common points of confusion in the next class, ensuring that students have a clearer understanding of these critical concepts.

Suitable for Large Classrooms: yes

Simulation/Games

How it Works: Students participate in simulations or educational games that mimic real-world processes, allowing them to apply their knowledge in a practical context.

Example: In an economics course, students could participate in a stock market simulation where they make investment decisions and analyze the outcomes.

Suitable for Large Classrooms: No

Socratic Seminar

How it Works: A student-led discussion where participants ask and answer questions to stimulate critical thinking and illuminate ideas.

Example: In a seminar on biotechnology, students discuss the role of genetically modified organisms (GMOs) in agriculture. Questions could include, "What are the benefits and risks of GMOs in food production? How should GMOs be regulated?" This seminar encourages students to critically examine the use of biotechnology in agriculture and its potential implications.

Suitable for Large Classrooms: Yes

Project-Based Learning

How it Works: Students work on a project over an extended period, which culminates in a final product or presentation that demonstrates their understanding.

Example: In a marketing course, students might work on creating a complete marketing campaign for a local business, from market research to execution.

Suitable for Large Classrooms: No

Learning Stations

How it Works: Students rotate through different stations, each with a different activity or task, allowing them to engage with the material in various ways.

Example: In a chemistry course, each station could focus on a different chemical reaction, with hands-on experiments at each.

Suitable for Large Classrooms: No

Problem-Posing

How it Works: Instead of presenting problems to be solved, the instructor encourages students to identify and pose their own problems, fostering deeper inquiry.

Example: In an environmental science course, students could identify local environmental issues and propose research questions to explore.

Suitable for Large Classrooms: No

Discussion Boards

How it Works: Online platforms where students can post questions, responses, and reflections, allowing for continuous engagement outside of the classroom.

Example: In a discussion board focused on real-world applications of mathematical theories, students might be asked to discuss how a specific mathematical concept (e.g., probability, statistics, or linear algebra) is used in fields like engineering, economics, or data science. A prompt could be, "Discuss how linear algebra is used in computer graphics. Provide an example or case study." Students then contribute examples and discuss the applications.

Suitable for Large Classrooms: Yes

Service Learning

How it Works: Combines academic instruction with community service, allowing students to apply their learning in real-world contexts while giving back to the community.

Example: In a law course, Law students develop and present workshops on important legal topics, such as tenants' rights, employment law, or consumer protection, to local community groups. These presentations help demystify the law for non-lawyers and empower community members to understand and assert their rights. Students gain experience in public speaking, legal research, and community engagement.

Suitable for Large Classrooms: No