

Developing Students' Critical Skills Based on Case-Study (Keys-Stadi) Technology

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Abstract: This article examines the issue of developing students' critical skills through the use of case-study (keys-stadi) technology in the higher education process. The main purpose of the research is to determine the pedagogical capabilities of case-study technology in shaping students' skills of identifying problems, analyzing information, evaluating evidence, developing alternative solutions, and making reasoned decisions. The research employed methods of theoretical analysis, pedagogical observation, the development of case assignments, and the assessment of students' performance. The results of the analysis showed that, compared to traditional reproductive education, case-study technology enhances students' active participation and increases their capacity for independent thinking and for approaching problem situations from various points of view.

Keywords: Case-study, keys-stadi, critical thinking, critical skill, higher education, problem-based learning, active learning, independent thinking, decision-making.

Introduction: Today, one of the important directions in reforming the higher education system is the development of students' independent and critical thinking skills. In the "Concept for the Development of the Higher Education System of the Republic of Uzbekistan until 2030," approved by Decree No. PF-5847 of the President of the Republic of Uzbekistan dated October 8, 2019, the qualitative renewal of the content of higher education and the wide-scale introduction into the educational process of modern pedagogical technologies that develop students' critical thinking, analysis of problem situations, and independent decision-making skills are established as priority tasks. From this point of view, one of the main tasks of higher education is not merely to provide students with theoretical knowledge, but to shape their skills in applying acquired knowledge to real and problem situations, analyzing information, comparing evidence, drawing independent conclusions, and making reasoned decisions. [1]

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to provide students with theoretical knowledge, but to shape their skills in applying acquired knowledge to real and problem situations, analyzing information, comparing evidence, drawing independent conclusions, and making reasoned decisions. In particular, under conditions of an accelerating flow of digital information, students' critical evaluation of information obtained from various sources is becoming increasingly important.

The concept of critical thinking in the educational process is regarded not as the simple acceptance of a given piece of information or problem, but as the process of analyzing it, evaluating evidence, drawing logical conclusions, and substantiating decisions. In the Delphi study conducted by experts under P. Facione, interpretation, analysis, evaluation, inference, explanation, and self-regulation are identified as the core cognitive skills of critical thinking. [2]

R. Ennis, meanwhile, links critical thinking to reasonable and reflective thinking, considering a person's ability to arrive at a reasoned decision about what to believe or

how to act to be essential. [3]

The use of active learning methods is of particular importance in developing these skills. One such method is case-study, or keys-stadi, technology. Case-study enables students to analyze a real or near-real-life situation, identify the causes of a problem, examine the available evidence, and develop alternative solutions.

C.F. Herreid, analyzing the methodological aspects of applying the case-study method in higher education, presents the processes of creating a case, presenting it, and discussing it as important components of education. [4]

The influence of the case-study method on students' critical thinking has also been confirmed in empirical research. In particular, a study conducted by Mahdi, Nassar, and Almuslamani involving higher education students showed that the use of the case-study method has a positive effect on developing students' critical thinking skills. [5]

Furthermore, subsequent research also demonstrates the effectiveness of this method. A systematic review and meta-analysis conducted in 2025 found that, compared with traditional teaching methods, case-based learning significantly improves students' critical thinking dispositions. [6]

Proceeding from this, the present study identifies as its central problem the determination of the pedagogical capabilities of case-study technology in developing students' critical skills.

Research aim: to determine the pedagogical capabilities of developing students' critical skills on the basis of using case-study technology.

Research objectives:

1. to theoretically analyze critical thinking and its core components;
2. to reveal the pedagogical essence of case-study technology;
3. to determine the influence of case assignments on students' analytical and critical thinking;
4. to propose a methodology for developing students' skills in resolving problem situations on the basis of case-study.

METHODOLOGY

The research employed both theoretical and practical methods. At the theoretical stage, scientific-pedagogical literature on critical thinking, case-based learning, and case-study technology was analyzed. At the practical stage, the possibilities of developing students' skills in analysis, evaluation of evidence, and decision-making were studied by presenting students with case assignments developed on the basis of problem situations.

The main characteristic feature of case-study technology is that the student is not given a ready-made solution. Rather, the student is introduced to a particular situation and is required to independently identify the core problem within it. William Ellet distinguishes various analytical tasks involved in working with a case, such as problem-solving, decision-making, or situation evaluation. [7]

The study proposes that a case-study-based lesson be organized in the following stages:

Stage 1 – Presenting the problem situation.

Students are given a problem situation taken from real life or one that closely resembles a real situation.

Stage 2 – Identifying the problem.

Students study the content of the case and distinguish between primary and secondary problems.

Stage 3 – Analyzing information.

Students analyze the facts, statistical data, and other evidence provided in the case.

Stage 4 – Developing alternative solutions.

Students propose several options for solving the problem and compare their advantages and disadvantages.

Stage 5 – Decision-making.

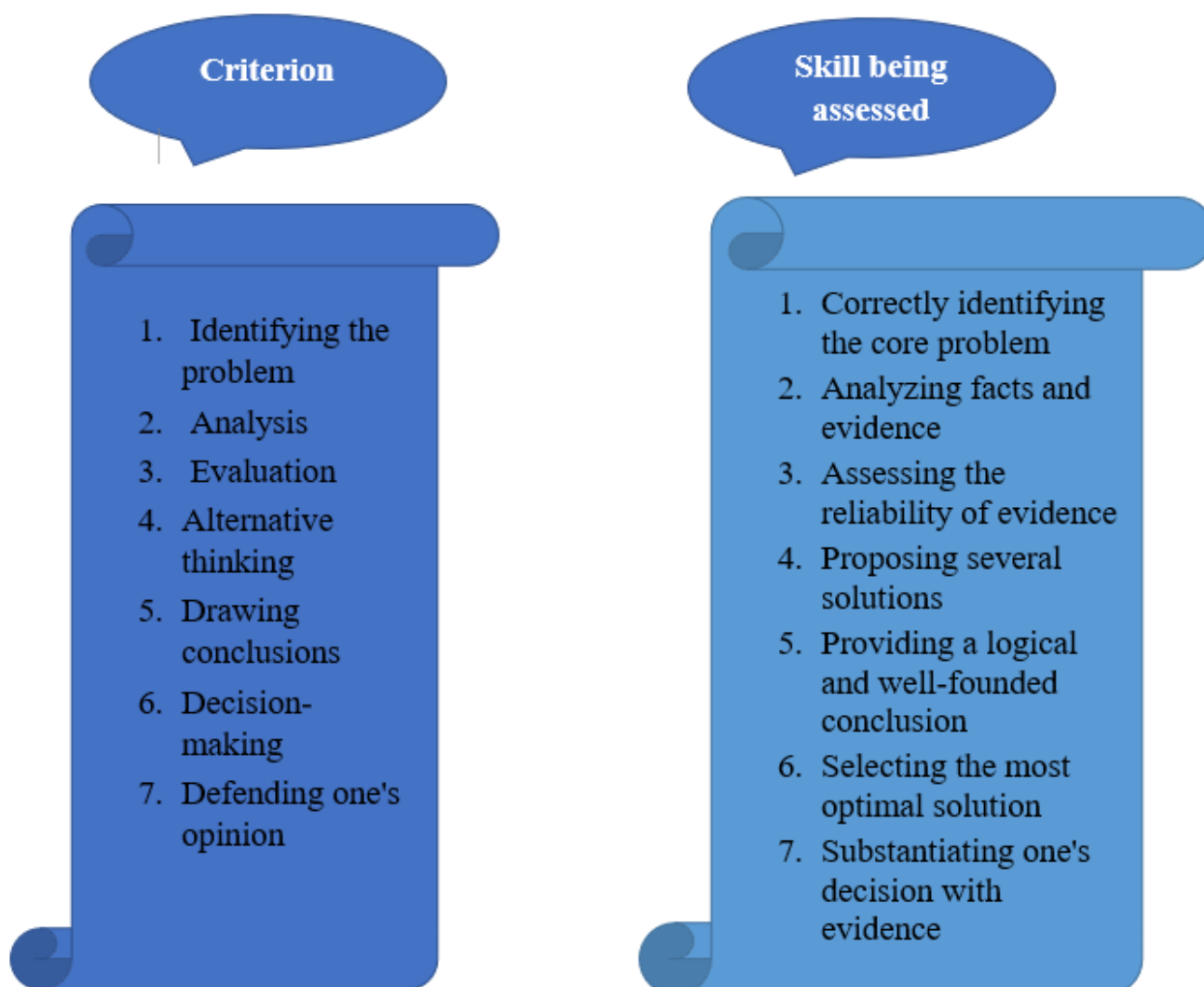
Each group selects the solution it considers most optimal and substantiates it with evidence.

Stage 6 – Discussion and reflection.

Groups defend their decisions, analyze the views of other groups, and re-evaluate their own decisions.

These stages are directly related to the components of critical thinking identified by Facione, such as analysis, evaluation, inference, and self-regulation. [3]

The following criteria can be used in assessing students' critical skills:



RESULTS

The theoretical and practical analysis of the research showed that the use of case-study technology has a number of pedagogical capabilities for developing students' critical skills.

First, case-study transforms the student from a passive recipient of ready-made information into an active participant who independently analyzes a problem. In the course of studying the case, the student identifies the causes of the problem, sorts through the available information, and searches for the connections between them.

Second, cases develop alternative thinking in students. The opportunity to approach a single problem from various points of view encourages the student to compare several possible solutions rather than search for a single answer.

Third, case-study shapes discussion and argumentation

skills. The student is not limited to simply stating an opinion, but strives to substantiate its correctness through evidence.

Fourth, because case-study models real-life situations, it ensures the connection of theoretical knowledge with practice. Herreid emphasizes that the application of the case-study method in higher education makes it possible to bring precisely real situations into the educational process. [4]

Systematic research on case-based learning also demonstrates this method's positive effect on educational outcomes. A 2025 meta-analysis synthesized data from 13 studies involving 1,396 participants, and found case-based learning to be associated with a significant improvement in critical thinking dispositions. [6]

In addition, other systematic reviews on case-based learning have likewise noted that this approach has a

positive effect on developing students' 21st-century skills, including critical thinking. [8]

Thus, through case-study technology, the following critical skills can be developed in students:

- identifying the problem;
- analyzing information;
- comparing evidence;
- determining cause-and-effect relationships;
- evaluating different points of view;
- developing alternative solutions;
- drawing logical conclusions;
- making reasoned decisions;
- defending one's opinion with evidence;
- reviewing and reflecting on one's own decisions.

DISCUSSION

The results obtained show that case-study technology is one of the active pedagogical technologies serving to develop students' critical thinking. Its main advantage lies in ensuring, within the educational process, a connection between theoretical knowledge and practical situations.

In the traditional lecture format, the student most often receives ready-made knowledge and reproduces it. In case-study technology, however, the student encounters a problem situation and is required to find a solution independently. For this reason, this method stimulates a higher level of cognitive activity.

The research conducted by Mahdi and co-authors in higher education likewise showed that the use of the case-study method is associated with the development of critical thinking. [4] At the same time, the effectiveness of case-study depends not only on the mere presence of a case, but also on its content, complexity, the teacher's facilitation skill, and the proper organization of discussion.

In order to organize case-study technology effectively, it is advisable for the teacher to adhere to the following principles:

1. the case should represent a real or near-real-life problem;
2. the situation should have several possible solution options;

3. the student should be given sufficient information for independent thinking;

4. a ready-made answer should not be provided in advance;

5. group discussion should be organized;

6. students should defend their opinions with evidence;

7. reflection should be carried out at the end.

Asking students questions such as "What is the main cause of the problem?", "Which piece of evidence is most reliable?", "What other solutions exist?", "What evidence is your decision based on?", and "What risks does the proposed solution carry?" while working with a case further activates the process of critical thinking. Such questions enable the student not only to give an answer, but also to reconsider the grounds for their own opinion.

At the same time, the case-study method also has certain limitations. Developing high-quality cases requires methodological preparation and time on the part of the teacher. Moreover, not all students may participate equally actively in group discussion. For this reason, the teacher needs to distribute roles appropriately and combine individual and group assignments.

CONCLUSION

In conclusion, case-study (keys-stadi) technology can serve as an effective pedagogical tool for developing students' critical skills in higher education. This technology helps develop students' skills in analyzing problem situations, evaluating evidence, developing alternative solutions, drawing logical conclusions, and making reasoned decisions.

The effectiveness of case-study technology depends primarily on how life-like and problem-based the content of the case is, the availability of several possible solutions, and the proper organization of discussion by the teacher. Therefore, in introducing keys-stadi technology into the higher education process, it is advisable to organize it not as a simple assignment, but as a pedagogical process based on the sequence: identifying the problem → analysis → evaluating evidence → developing alternative solutions → decision-making → reflection.

In future research, it is advisable to study the

effectiveness of case-study technology in various fields of education through experimental testing, to compare students' level of critical thinking through experimental and control groups, and to make use of standardized assessment tools.

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