Implementation of Team-Based Projects and Case Method in Blended Learning at University of Jember: An Empirical Study

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Abstract **- Case methods and Team-Based Projects are essential pedagogical approaches that should be implemented in university lectures, including at Universitas Jember. This aligns with the Ministry of Education and Culture Decree of 2020, which outlines Key Performance Indicator (KPI) 7. As such, assessing the implementation of these methods at Universitas Jember is crucial. This study adopts a mixed-methods design, involving 352 lecturers as participants. The research instruments, including surveys and observation sheets, were validated by expert reviewers. Data analysis integrates both quantitative and qualitative approaches. Key findings include: (1) The dominant lecture mode at Universitas Jember combines online and offline teaching, reflecting current trends. (2) Lecturers employ an integrated approach, combining case methods and team-based projects. (3) Online learning is used to optimize real-world problem-solving, the lecturer's role, the assessment system, and the formulation of Course Program Learning Outcomes (CPLO). In contrast, the combination of online and offline modes enhances student engagement, facilitates the use of study groups, ensures the quality and quantity of tangible outputs, and effectively manages assignment deadlines.**

Keywords **– Team-based project, case method, online learning, offline learning, blended learning.**

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1. Introduction

This chapter discusses the implementation of the Case Method and Team-Based Project at the University of Jember, two pedagogical approaches that were adopted in the higher education learning process. With the continuous development of educational policies, especially post-Covid-19, many universities, including the University of Jember, began adapting blended learning methods, combining both online and offline teaching modes. The Case Method, based on case studies and group discussions, focused on developing critical thinking, problem-solving skills, and communication abilities. Meanwhile, the Team-Based Project challenged students to work collaboratively to solve real-world problems, enhancing their teamwork and practical problem-solving skills.

This chapter aimed to explore how these two methods were implemented at the University of Jember, the challenges faced by lecturers in their application, and their impact on the quality of learning and students' learning outcomes. This study sought to provide an in-depth understanding of the application of these methods at the University of Jember, offering valuable insights for other educational institutions striving to improve the quality of higher education in Indonesia.

The demands of the times, which continue to progress from the Industrial Revolution 4.0 to the Societal Revolution 5.0, require individuals to adapt quickly and responsively in order to address various challenges and problems using innovations that emerged during the Industrial Revolution 4.0. Humans must continue learning how to do so. Learning involves facing problems that require logical, critical, creative, and systematic thinking for effective problem-solving. Education, from elementary to tertiary levels, is one of the best means of learning. Comparing the levels of formal education at each stage, tertiary institutions are responsible for producing workers who are closest to the qualifications of professionals.

Therefore, the learning paradigm in higher education needs to shift. Tertiary education should provide opportunities for students to develop their abilities and actualize themselves. Students should be supported to achieve outstanding accomplishments and transform their potential into competence.

The shift in the learning paradigm in tertiary institutions poses the greatest challenge for lecturers. As educators, lecturers must consistently engage in learning reconstruction. In the learning process, it is not only the students who learn but the lecturers as well. One crucial aspect to consider is learning resources. Lecturers should regularly update the course syllabus and review it each semester. If there are new study materials, references, or the latest research results related to the course and Course Program Learning (CPL), the course syllabus needs to be adjusted accordingly. As dedicated learners, lecturers should prepare lesson plans, read numerous references and relevant research results, conduct research or service, and integrate these elements into the course's lesson plan. This is done in the hope of achieving better learning outcomes.

According to the Decree of the Minister of Education and Culture No.754/P/2020, the required learning method in tertiary education refers to Key Performance Indicator (KPI) No.7, which states, "In-class learning: the percentage of undergraduate and D4/D3/D2 courses that use case-solving methods (case method) or group-based project learning (team-based Project) as part of the evaluation weight." The case method is a participatory learning approach based on discussions to solve cases or problems. Implementing this method hones critical thinking skills, problem-solving abilities, communication, collaboration, and creativity. In the case method, assignments are not given individually but rather completed in groups. The team-based project is a method that combines project-based learning activities with real assignments, challenging students to solve problems related to everyday life in groups. Through case-based learning methods and team-based projects, students are expected to become more creative, innovative and develop critical thinking skills.

University of Jember, one of the state universities in East Java, consists of three programs and fifteen faculties. The university has promoted and encouraged the implementation of both learning methods. The socialization and implementation of the case method and team-based projects at University of Jember fall under the authority of the LP3M (Institute for Research, Community Service, and Business Development). LP3M also conducts supervised learning audits as part of the process. The audits carried out by LP3M ensure the completeness of learning tools, including the course syllabus, contracts, syllabus, RTM, and assessment rubrics.

LP3M also verifies the evaluation design used to determine if the course has been designed using case methods or team-based projects. However, the diverse backgrounds of lecturers at University of Jember may result in varying interpretations of the implementation of these two learning methods. Therefore, it is necessary to explore how these learning methods are implemented to effectively and optimally achieve the KPI 7 target, which supports the development of students' potential to meet the demands of the job market. Thus, this study aims to describe the implementation profile of the case method and team-based projects in both offline and online lectures conducted by lecturers at University of Jember.

2. Literature Review

The case method is a discussion-based participatory learning method for solving cases or problems. This method aims to train and improve critical thinking skills in problem-solving, creativity, collaboration, and communication. In implementing the case method, students are given assignments completed in groups to gain diverse perspectives and various strategies that group members can propose. The case method described here can be categorized as problem-based learning. Students have the primary role in problem-solving, while the lecturer acts as a facilitator whose job is to observe, ask questions, direct discussions, and observe.

The advantage of case methods is that students are actively involved in developing higher-order thinking skills. In addition, knowledge will be embedded based on the schemata owned by students so that learning is meaningful and students can benefit from learning because the problems solved are directly related to real life. With this method, students are more independent and mature, able to give and receive opinions from others and instil positive social attitudes among students. However, the weak side of this method is that it requires preparation for learning, which includes many complex tools, problems, and concepts; sometimes, it takes much work to find relevant problems.

Some research results regarding the application of the case method show that learning with the case method is very effectively applied to various materials and can influence learning outcomes both in aspects of knowledge, attitudes and thinking, and communication skills [1], [2], [3], [4], [5]. Thus, the case method is expected to provide context-based complex learning experiences by associating phenomena that occur with lecture material to reduce the gap between theory and practice. Students are expected to be able to develop critical thinking skills and creativity in solving problems, increasing student enthusiasm and motivation, communication skills, cooperation, and respecting the opinions of others [6], [7], [8], [9].

Traditional learning practices centred on implementing conventional class lectures and laboratory teaching to carry out the curriculum must be revised to prepare students to face diverse assignments and work environments across disciplines [10]. Team-based projects provide new challenges for engineering educators in providing teaching resources, organizing and monitoring projects, and appropriate as well as fair assessment procedures that can be applied in the current situation in order to motivate students.

The hallmark of a team-based project is that the problem-solving process is carried out and completed by team members. Its characteristics necessitate introducing several new variables, especially the human factor. Therefore, this model's complexity comes from the scale of the problem and the complex cognitive, psychological, social, and behavioural interactions between group members during the problem-solving process [11], [12]. There are four main characteristics of team-based projects: cognitive, psychomotor, motivational, and affective (interpersonal and attitude) [13]. The performance in team-based learning projects is determined by the composition of all team members' four types of characteristics. In team-based projects, the assignments given are different from individual assignments. In a team-based project, it is possible to use individual problems or tasks solved in teamwork. Therefore, team-based projects are the best way to practice prior knowledge or even as a tool for delivering new learning material [14].

3. Data Collection and Analysis

This mixed methods research aims to reveal and describe in detail and depth the profile of the implementation of the case method and team-based projects carried out by University of Jember lecturers. The research begins with quantitative research and continues with qualitative research. The quantitative approach is conducted through surveys to collect data on lecture modes, lecture methods, and lecture implementation methods. Exploratory qualitative research was conducted to collect data on the implementation profile of the case method and team-based project through the selected subject's course syllabus documents.

The participants in this study were 352 lecturers teaching in the odd semester of 2022/2023 at the University of Jember who were willing to fill out the survey that was distributed voluntarily. Based on the survey results, at least two lecturers will be randomly selected (in each faculty and study program at the University of Jember) to analyze the suitability of the lesson plans with the responses given in the survey questionnaire.

The research locations used were all study programs at the University of Jember.

The researcher is the main instrument whose duty is as an informant, planner, data collector, analyzer, data interpreter, and reporter of the results of his research. Therefore, supporting instruments are needed: study planning observation sheets based on the case method or team-based project and survey questionnaires. The documentation method was used to collect data related to lecture activities, which included information from LP3M, and course syllabus obtained from random samples of survey respondents. These respondents came from various faculties that had implemented case or team-based project methods in their learning. The observation method is used to observe the suitability of the lesson plan. The survey method is used to collect data about the application of learning with the case method or team-based project to the achievements of the Course Program Learning Outcomes CPLO. There are 25 questions in the survey with ten learning implementation components. The survey sheet used has met the valid criteria.

This research was carried out according to the following stages:

(1) Formulating theory and indicators for planning and implementing the case method and team-based project,
(2) Developing research aid instruments,
(3) Collecting case method and team-based project planning data to all faculties and study programs at University of Jember to University of Jember's LP3M,
(4) Selecting research subjects based on established criteria,
(5) Collecting data on the implementation of case methods and team-based projects from research subjects through surveys and documentation,
(6) Conducting a comparative analysis to determine the profile of the application of the case method and team-based project at the University of Jember.

This study's data analysis process was carried out in two stages. The first stage is to analyze quantitative data. The steps of analysis are:

(1) Examining all available data from the results and surveys,
(2) Grouping data based on the choice of mode and choice of learning method,
(3) Calculating the percentage of participants in each category choice,
(4) Analyzing the tendency of respondents' choices,
(5) Concluding the tendency of the choice of learning mode and the application of learning methods.

Qualitative data analysis sourced from the course syllabus document is carried out through the steps of:

(1) Carrying out data reduction by explaining, choosing the main things, focusing on things that are important to the contents of the course syllabus data based on the specified categories,
(2) Presenting course syllabus suitability data with survey results in units that have been categorized,
(3) Conclude the results of analysis of survey and course syllabus suitability data.

4. Results

This section presents the findings of the study on the implementation of team-based projects and the case method in blended learning at the University of Jember. The findings are discussed across six main sub-sections: the application of teaching methods (4.1), the role and involvement of students (4.2), the use of study groups and real/complex problems (4.3), the role of lecturers and student work products (4.4), assignment timing and rating systems (4.5), and the formulation of course learning outcomes (4.6). Overall, this section provides an overview of the impact of these teaching methods on students and the learning process.

4.1. Implementation of lecture modes and learning methods

In this section, presented are the findings regarding the different modes of lecture delivery (online, offline, and combined) and the types of learning methods used (Case Method and Team-Based Project) based on a survey conducted with lecturers at the University of Jember. These results help in understanding the preferred lecture modes and teaching methods, as well as their effectiveness in supporting the learning process. The following are findings related to the implementation of lecture modes and learning methods based on the results of the survey. Overall, the survey results related to the choice of lecture mode and the type of learning method chosen are shown in Table 1.

Table 1. Trends in the use of learning methods and lecturer lecture modes at the University of Jember in odd semester 2022/2023

No	Study Mode	Methods									
		TBP		CM		Combination		Other		Total	
		f	%	f	%	f	%	f	%	f	%
1	Online		0,29	1	0,29	8	2,33	0	0	10	2,91
2	Offline	6	1,75	12	3,5	59	17,2	6	1,75	83	24,2
3	Combination	16	4,66	28	8,16	197	57,43	9	2,62	250	72,89
	Total	23	6,70	41	11,95	264	76,96	15	4,37	343	100

Table 1 above shows that the lecture mode that has become a trend for respondents from University of Jember lecturers is a combination of online and offline lectures followed by offline lectures and then online lectures. This statement is supported by the large percentage of online and offline combined mode users, which account for almost ¾ of the total respondents. The choice of the online and offline combination was due to the transitional conditions of learning modes after the Covid-19 pandemic period. Related to this, several respondents gave their attitudes, as shown in the interview excerpts below.

R1 : Actually, offline and online lectures have their own advantages and disadvantages. If lectures are offline, both students and lecturers will communicate more easily so that learning difficulties are easier to overcome. But online learning is more flexible because the time is easier to set at zero or night lectures, students or lecturers do not have to bother coming to campus late at night. At least when you have to change the schedule

R2 : The combination of online and offline is because it does not depend on room availability. So, a combination of the two, sometimes offline and sometimes online, is the most appropriate at the moment

Thus, in the odd semester of 2022/2023, the trend of using a combination of online and offline modes at the University of Jember is due to flexibility in lecture arrangements, such as time and lecture space. Regarding the selection of learning methods to be applied, Table 1 above shows that the trend of using learning methods within the University of Jember successively from the most popular is the combination of team-based projects and the case method, the case method, and the last is the team-based project. Based on the data obtained, it is known that there are still 4.37% of respondents who use learning methods other than the team-based project or case method. This indicates that not all courses can be implemented in these two models. Courses that do not apply the case method and team-based project are introductory science courses which are, on average, in semesters 1 and 2.

4.2. The role and involvement of students in learning

This section outlines the role and active involvement of students during the different learning modes. The data explores how students participate in both Team-Based Project and Case Method learning activities across online, offline, and combined modes.

Data related to the roles and involvement of students during online, offline, or combined learning can be seen in Table 2. The findings provide insights into the effectiveness of each mode in fostering student engagement.

Table 2. Frequency of implementation of student role/involvement components in various online, offline, or combination learning methods

No	Study Mode	implementation frequency	Online (%)	Offline (%)	Combination online and offline (%)
1	TBP	Always	5,26	4,95	4,14
		Sometimes	5,26	2,25	2,13
		Never	0	0,22	0,14
2	CM	Always	3,51	8,11	6,35
		Sometimes	7,02	8,11	4,99
		Never	0	0	0,14
3	Combination TBP and CM	Always	49,12	44,37	49,5
		Sometimes	29,82	31,31	31,38
		Never	0	0,68	0,71
4	Other	Always	0	0	0,5
		Sometimes	0	6,08	2,71
		Never	0	1,35	0,63

Table 2 shows that in carrying out learning using the team-based project method, the percentage of University of Jember lecturers who "always" or "sometimes" actively involve students in online mode is no less than the other two modes. This case shows that University of Jember lecturer respondents in learning using the team-based project method through online mode involve students more actively than through offline mode or a combination of online and offline. There are no lecturers who "never involve" students actively in team-based project learning in online mode, while there are still minimal percentages in other modes. Successively, lecturers who implement team-based projects engage students better when done online, offline, and finally, a combination of the two.

In the implementation of lectures using the case method, the percentage of lecturers who actively involve students from the largest to the smallest are lectures carried out via offline mode, a combination of online and offline, and the last is through online mode. However, the implementation of lectures using the case method by respondents from University of Jember lecturers tended to only occasionally involve the active role of students in lectures with online and offline modes. In contrast, in the combination of online and offline lectures, it turned out that more University of Jember lecturers always involve students actively. This case differs from the implementation of team-based projects, where lecturers tend to actively involve students through lecture modes, whether online, offline, or a combination of both.

In implementing lectures using a combination of team-based project and case methods, the percentage of lecturers who actively involve students from the largest to the smallest are lectures carried out through a combination of online and offline modes. Followed by lectures in online mode, and the last is through offline mode. In addition, through the implementation of a combination of team-based projects and the case method, information was obtained that University of Jember lecturer respondents tend to "always" actively involve students in both online and offline lectures or a combination of online and offline.

4.3. Findings on the use of study groups and real/complex problems

Here, discussed is the frequency of study group usage and the incorporation of real-world or complex problems in the learning process. This section examines how the application of these learning strategies enhances the problem-solving skills of students and promotes collaborative work, especially in Team-Based Project and Case Method courses. Data related to the components of using study groups in Team-Based Projects or Case Method lectures through online or offline modes are revealed through one single question item: *Is the class divided into groups of more than one student to work on assignments together for a specified period?* This question item provides the options "always," "sometimes," or "never."

The data is then analyzed to compare the implementation of each learning method (Team-Based Project, Case Method, combination of Team-Based Projects and Case Method, or other methods) in each mode of lecture (online, offline, or a combination of both).

Table 3 below presents the data and analysis of the study group components.

Table 3. Frequency of using study groups in the implementation of various online, offline, or combination of learning methods

No	Study Mode	implementation frequency	Online (%)	Offline (%)	Combination online and offline (%)
1	TBP	Always	0	8	5,58
		Sometimes	10	0	0,86
		Never	0	0	0
2	CM	Always	10	10,67	6,01
		Sometimes	0	5,33	5,15
		Never	0	0	0,43
3	Combination TBP and CM	Always	50	56	57,08
		Sometimes	30	18,67	24,89
		Never	0	0	0
4	Other	Always	0	1,33	0
		Sometimes	0	4	3,86
		Never	0	1,33	0

Based on Table 3, it appears that in carrying out learning using the team-based project method, the most significant opportunity for University of Jember lecturers is always to use/form groups when learning is carried out offline. The same thing applies to lecturers who use the case method learning method; the most significant tendency to use study groups occurs when lectures are offline. However, this is different for lecturers who use a combination of team-based project and case methods; the tendency to use study groups is most significant in lectures that are carried out through a combination of online and offline learning. In addition, this data also shows that the use of study groups tends to occur mostly in lectures using a combination of team-based projects and cased methods carried out through online and offline combined modes.

Data related to components of the use of natural/complex problems in team-based project lectures or cased methods through online or offline lectures are revealed through one single question item. Namely, in lectures, groups are given real-world problems that occur in society or complex questions and then given the opportunity to develop work plans and collaboration models. This question item provides the options always, sometimes, or never. Then the data is analyzed to compare the implementation of each learning method (team-based project, case methods, combination of team-based projects and case methods, or other methods) in each mode of lecture (online, offline, or a combination of online and offline). Table 4 below presents data and analysis on real or complex problem components.

Table 4. Frequency of using real/complex problems in the implementation of various online, offline, or combination learning methods

No	Study Mode	implementation frequency	Online (%)	Offline (%)	Combination online and offline (%)
1	TBP	Always	11,11	5,48	3,88
		Sometimes	0	1,37	2,59
		Never	0	0	0
2	CM	Always	0	9,59	5,17
		Sometimes	11,11	6,85	5,6
		Never	0	0	0,43
3	Combination TBP and CM	Always	44,44	36,99	39,22
		Sometimes	33,33	39,73	41,38
		Never	0	0	1,29
4	Other	Always	0	0	0,43
		Sometimes	2,74	2,59	0
		Never	0	4,11	0,86

Based on Table 4 above, learning using the team-based project method is the most significant opportunity for University of Jember lecturers to always use absolute/complex problems when learning online. Lecturers who use the case method learning method have the most significant tendency to use natural/complex problems that occur when lectures are held in offline mode. However, this is different for lecturers who combine team-based projects and case methods; the tendency to use absolute/complex problems is most significant in lectures carried out through online and offline learning. In addition, this data also shows the use of natural/complex problems that tend to occur the most in lectures using a combination of team-based projects and cased methods, which are carried out through online and offline combined modes.

4.4. Findings on the lecturer's role and student work products

This section highlights the lecturer's role in guiding students during the implementation of Case Method and Team-Based Project learning activities. It also examines the types of student work products that result from these methods, focusing on how these products contribute to the practical relevance of their learning experience. Data related to the role of the lecturer in the group during learning can be seen in Table 5.

Table 5. Frequency of use of lecturer roles in groups in implementing various online, offline, or combination learning methods

No	Study Mode	implementation frequency	Online (%)	Offline (%)	Combination online and offline (%)
1	TBP	Always	8,77	6,13	5,11
		Sometimes	3,51	0,57	1,43
		Never	0	0	0
2	CM	Always	0	10,54	7,6
		Sometimes	1,75	5,17	2,99
		Never	0	0,38	0,19
3	Combination TBP and CM	Always	61,40	57,85	60,40
		Sometimes	21,05	15,9	19,43
		Never	3,51	1,15	1,06
4	Other	Always	0	2,3	1,81
		Sometimes	0	2,87	1,43
		Never	0	1,53	0,25

Based on Table 5 above, it appears that in carrying out learning using the team-based project method, the role of University of Jember lecturers in the largest groups is when learning is carried out online. The same thing applies to lecturers who use a combination of team-based projects and case methods, the role of lecturers in groups in using this method is greater when lectures are carried out through online learning. Different things apply to learning carried out using the case method learning method. In this method, University of Jember lecturer respondents have a role in the group when lectures are held in offline mode. In addition, this data also shows that the maximum role of lecturers in groups occurs using a combination of team-based projects and cased methods implemented via online mode.

Data related to components of the use of natural products in team-based project lectures or cased methods through online or offline lectures is revealed through a single question item, namely, "Do students produce real work (authentic and contextual) in lectures?". This question item provides the options always, sometimes, or never. Then the data is analyzed to compare the implementation of each learning method (team-based project, case methods, combination of team-based projects and case methods, or other methods) in each mode of lecture (online, offline, or a combination of online and offline). Table 6 below presents data and analysis on natural product components.

Table 6. Frequency of producing real products in the implementation of various online, offline, or combination learning methods

No	Study Mode	implementation frequency	Online (%)	Offline (%)	Combination online and offline (%)
1	TBP	Always	11,11	2,74	3,54
		Sometimes	0	4,11	3,10
		Never	0	0	0
2	CM	Always	0	2,74	1,77
		Sometimes	0	10,96	7,96
		Never	11,11	2,74	1,77
3	Combination TBP and CM	Always	11,11	17,81	20,35
		Sometimes	55,56	53,42	58,41
		Never	11,11	5,48	3,10
4	Other	Always	0	0	0
		Sometimes	0	0	2,21
		Never	0	6,85	1,33

Based on Table 6 above, learning using the team-based project method is the most significant opportunity for University of Jember lecturers to always use natural products as learning products/outcomes when learning is carried out online. Different things apply to lecturers who use the case method learning method; namely, the most significant tendency to use natural products as learning products/outcomes occurs when lectures are carried out offline and are impossible in online mode. Different things were again found in lecturers who combined team-based projects and case methods; the tendency to use natural products as learning products/outcomes was most significant in lectures carried out through online and offline learning. Thus, each learning method has a way of maximizing different learning costs.

4.5. Findings on assignment timings and rating systems

In this section, presented are the findings related to the timing of assignments and the assessment systems used in both Team-Based Project and Case Method courses. The data provides insights into how assignment deadlines and evaluation practices impact the learning process across different learning modes. Data related to the timing of assignment components in Team-Based Projects or Case Method lectures through online or offline lectures is revealed through one question item: "Are students working on lectures within a certain period of time?" This question item provides the options "always," "sometimes," or "never." The data is then analyzed to compare the implementation of each learning method (Team-Based Project, Case Method, combination of Team-Based Projects and Case Methods, or other methods) in each mode of lecture (online, offline, or a combination of both). Table 7 below presents data and analysis on the assignment time component.

Table 7. Frequency of assignment timings for implementation of various online, offline, or combination learning methods

No	Study Mode	implementation frequency	Online (%)	Offline (%)	Combination online and offline (%)
1	TBP	Always	11,11	5,33	5,65
		Sometimes	0	1,33	0,87
		Never	0	0	0
2	CM	Always	0	9,33	8,7
		Sometimes	11,11	6,67	3,04
		Never	0	0	0
3	Combination TBP and CM	Always	33,33	66,67	66,52
		Sometimes	44,44	8	13,04
		Never	0	0	0
4	Other	Always	0	2,67	2,17
		Sometimes	0	2,67	1,3
		Never	0	1,33	0

Based on Table 7 above, in carrying out learning using the team-based project method, assignments for University of Jember lecturers are usually carried out when learning is online. The same thing also applies to lecturers who use the case method; most of the time, assigning University of Jember lecturers is done when learning is carried out online.

Things that are different only apply to learning that is carried out using the combined case method and team-based project learning method, namely University of Jember lecturer respondents specifying the time of assignment when the combined team base project and case method lectures are carried out online and offline combined modes.

Data related to the role of the research system can be seen in Table 8.

Table 8. Frequency of assessment systems in the implementation of various online, offline, or combination learning methods

No	Study Mode	implementation frequency	Online (%)	Offline (%)	Combination online and offline (%)
1	TBP	Always	9,09	5,14	4,93
		Sometimes	3,03	1,37	1,64
		Never	0	0,34	0
2	CM	Always	0	8m56	7,24
		Sometimes	3,03	7,19	3,84
		Never	0	0,68	0
3	Combination TBP and CM	Always	60,61	59,59	55,15
		Sometimes	24,24	16,1	24,89
		Never	0	0,34	0,99
4	Other	Always	0	0,68	1,32
		Sometimes	0	5,14	1,75
		Never	0	1,03	0,44

Based on Table 8 above, it appears that in carrying out learning using the team-based project method, University of Jember lecturer respondents use a more comprehensive assessment system (by weighting assessments on aspects of participation and projects, preparing assessment rubrics, formulating evaluations and providing feedback) when learning is carried out online. The same thing also applies to lecturers who use a combination of the team-based project and case method; lecturer respondents who use this method are more comprehensive in the assessment system when lectures are carried out through online learning. Different things apply to learning carried out using the case method learning method. In this method, University of Jember lecturer respondents are more comprehensive in the assessment system when lectures are offline.

In addition, this data also shows that maximum comprehensiveness occurs most often using a combination of team-based projects and cased methods implemented via online mode.

4.6. Findings on the formulation of course learning outcomes

This section discusses the formulation and adaptation of CPLO in response to the Case Method and Team-Based Project methods. Explored is how the alignment of CPLOs with the learning methods contributes to achieving educational goals and enhancing the overall learning experience. Data related to the formulation of Course Learning Outcomes can be seen in Table 9.

Table 9. Frequency of formulating course learning outcomes in the implementation of various online, offline, or combination learning methods

No	Study Mode	implementation frequency	Online (%)	Offline (%)	Combination online and offline (%)
1	TBP	Always	12,5	4,58	6,32
		Sometimes	0	1,96	0,22
		Never	0	0	0
2	CM	Always	0	12,42	9,15
		Sometimes	0	3,27	1,74
		Never	0	0	0
3	Combination TBP and CM	Always	75	58,17	67,97
		Sometimes	12,5	15,03	12,42
		Never	0	0	0
4	Other	Always	0	4,58	2,18
		Sometimes	0	1,96	1,31
		Never	0	0	0

Based on Table 9 above, in carrying out learning using the team-based project method, the most significant tendency for University of Jember lecturer respondents to continually formulate CPLO and adapt lecture material to CPLO is when learning is carried out online. Different things apply to lecturers who use the case method learning method; namely, the most significant tendency to continually formulate CPLO and adapt lecture material to CPLO occurs when lectures are held offline, which is impossible in online mode. Different things were again found in lecturers who used a combination of team-based projects and the case method; the tendency to continually formulate CPLO and adapt lecture material to CPLO was greatest in lectures carried out through online and offline learning. Thus, each learning method has a different way of formulating CPLO.

5. Discussion

In the odd semester of 2022/2023, the trend of using a combination of online and offline modes at the University of Jember is driven by the flexibility it provides regarding lecture arrangements, such as lecture time and space. The implementation of this combination aligns with the Chancellor's Circular of the University of Jember, number 17544/UN25/TU/2021, which allows lectures to be conducted in three modes: online, offline, and a combination of offline and online. This trend in lecture modes at UNEJ is also supported by previous studies on post-Covid-19 lectures, which tend to be hybrid due to adjustments or adaptations to students' psychological conditions [15] and the readiness of higher education facilities [16], [17]. Therefore, the policy related to the percentage of online lecture implementation is a suitable step in minimizing the impact of learning loss resulting from online lectures [17], [18].

Regarding the selection of learning methods, the trend at the University of Jember indicates that the most popular approach is a combination of team-based projects and case methods, followed by case methods and team-based projects, with a total percentage of 95.63%. However, approximately 4.37% of respondents still use other learning methods besides team-based projects or case methods. Based on these findings, the achievement of KPI 7 in tertiary institutions, which pertains to collaborative and participatory classes, exceeds the target set by the Ministry of Education, Culture, Research, and Technology by 35% (Regulation of the Minister of Education and Culture of the Republic of Indonesia, 2020). Additionally, the two learning methods implemented by lecturers at University of Jember during the 2021/2022 academic year serve as learning solutions applicable during and after the Covid-19 pandemic [19]. However, based on LP3M data, it is evident that most lecturers still need to use updated guidelines and learning stages prior to implementing collaborative and participatory learning. Consequently, the analysis of Learning Service Survey suitability with the survey results reveals the necessity for prepared lecture sets to adhere to the components and characteristics of the team-based project method and the case method. LP3M organizes socialization and training sessions every semester to prepare learning tools utilizing the case method and team-based projects.

The utilization of study groups and real/complex problems is most prominent in lectures that employ a combination of team-based projects and case methods conducted online and offline. The application of study groups and the inclusion of complex/real problems help familiarize students with independent and structured subject study [20], active collaboration with groupmates or their environment [21], and practical problem-solving abilities [22].

Moreover, implementing the case method aids students in developing higher-level thinking skills and becoming critical thinkers [23], [24], [25].

The role of the lecturer in group activities is most significant in offline lectures utilizing the team-based project method or a combination of the case method and team-based projects. Conversely, for lectures employing the case method, the offline mode is recommended for University of Jember lecturers to actively participate in study groups. This observation aligns with previous research, which indicates that the role of the lecturer is more prominent in offline learning compared to online learning [26], [27], [28], [29]. The reason behind this disparity is that students heavily rely on lecturers when being physically present in the class, whereas online learning necessitates more independent study [13], [29].

6. Conclusion

This study shows that the implementation of the Case Method and Team-Based Project at the University of Jember has had a significant impact on improving the quality of learning, both theoretically and practically. The blended learning approach, which combines online and offline learning modes, provides the necessary flexibility in managing lecture schedules and classroom spaces, while also allowing students to be more actively engaged through group assignments and real-world problem-solving, which are highly relevant to the demands of the job market. The role of the lecturer as a facilitator in Team-Based Project learning is particularly important, especially in face-to-face sessions, where lecturers can guide discussions, provide feedback, and keep students focused. Furthermore, the implementation of the Case Method proved to be more effective when conducted face-to-face, as it facilitated better interaction between students and lecturers, encouraging deeper discussions and collaborative learning. The implications of this study emphasize the importance of adopting learning methods that actively involve students in discussions and group projects, thereby preparing them for the challenges they will face in the workforce. Therefore, higher education institutions should continue to develop learning models that integrate problem-based learning methods, such as the Case Method and Team-Based Project, along with educational technologies that support flexibility and collaboration in diverse learning environments. Future research should further explore the long-term impact of these methods on students' critical thinking, problem-solving, and collaboration skills, as well as how technology can be leveraged to support collaborative learning among geographically dispersed students.

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