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Research Article

An alternative way to prepare graduate thesis: The effect of case-based approach on candidate and supervisor development

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In this study, an alternative method of addressing the problem of high plagiarism in graduation theses is proposed, which results in low motivation among candidates as well as supervisors. Using international experience in training economics specialists, particularly those not commonly implemented in Kazakhstan, the researchers propose a new approach to graduate thesis preparation. This involves introducing the use of unstructured cases by candidates while ensuring alignment with university policies. This study compares two ways of organizing graduate thesis preparation, distinguishing between the traditional method and the method that utilizes case studies. The study conducted throughout 6 months covers 160 undergraduate students divided into two groups. Each group prepared and defended their graduate theses according to one of the models. Statistical analysis revealed that the model of thesis preparation using the case-based approach were more effective. The approach involving case study provided an improvement in both candidates' and supervisors' responsibility and advanced the professional skills contributing to employment upon graduation.

Keywords: Case-based approach; Plagiarism; Supervisor; Thesis; Undergraduate students

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1. Introduction

The current phase of university education is called Higher Education 4.0. The fourth stage came about under the influence of the fourth industrial revolution, which involves the development of new technology -digitalization of learning- (Galizina et al., 2021), the introduction of artificial intelligence (Annushkin et al., 2021; Chumakova et al., 2022; Kooli, 2023), and automation and interconnection of technological devices in various socio-economic spheres (Chumakova et al., 2023a). Throughout the paradigm of Education 4.0, tumultuous changes in society are continually improved and adapted (Velazco & Josefina, 2022). To keep up with constant changes in the field of education, educational institutions must not limit their use of the advantages offered by new

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technology (Abramova & Korotaeva, 2019), but look for new ways to teach and test knowledge (Rodenkova et al., 2022). On the one hand, finding new opportunities complicates the educational process (Wagner et al., 2023). On the other hand, it promotes better teaching, research, and learning (Kooli, 2019; Shafazhinskaya et al., 2023). Moreover, the application of the principles of Education 4.0 will ensure students are more prepared for the future requirements of the Industry 4.0 labor market (Eskerkhanova et al., 2023) with a special focus on critical and creative thinking, self-organization among students (Tretyakova et al., 2023), and student-teacher collaborations. According to the Sustainable Development Goals (Chumaceiro Hernandez et al., 2022) established by the United Nations, a critical task is a high-quality education associated, in particular, with providing a university education to all capable and talented students (Dzhancharova et al., 2023).

Researchers point the attention of the educational community to the fact that Industry 4.0 may affect the development of the humanities and social sciences (Karpova et al., 2021). As machines/robots are increasingly used, activities are automated, and information and communication technologies [ICT] are introduced, students may have difficulty dialoguing, debating, discussing, analyzing, and reasoning in the learning process (Cacciuttolo et al., 2023; Uteuliyev et al., 2023). From the perspective of our research topic, we examine this issue in the context of diploma theses prepared by economics students.The requirements of higher education standards in many countries, including Kazakhstan, require students graduating from universities to write a thesis. Based on an analysis of research findings, we can outline several issues that reduce the efficiency of the educational process, particularly in writing and defending theses.

The first issue is the responsibility and motivation of students. There is a lack of motivation among students to approach the writing of a thesis creatively (Kornoukhov, 2022). When students prepare their theses, they rely primarily on theoretical material, resulting in excessive borrowings or even plagiarism (Filipec, 2021). Furthermore, plagiarism evolves each day. For instance, one can now easily purchase a thesis on the Internet. In order to improve the originality of the paper, it is often necessary to sacrifice its substance in the process of writing the thesis. Students' plagiarism and irresponsible attitudes toward education contribute to the decline in quality of education (Troy et al., 2022), and result in an inadequate level of professional competencies for future specialists (Chekhovich & Belenkaia, 2018; Montayev et al., 2022). The use and introduction of AI tools in writing graduation theses, such as ChatGPT, is widely debated in the scientific community (Cacciuttolo et al., 2023). These practices pose a threat to learning and teaching processes - such as excessive reliance on artificial intelligence, dishonesty, an inappropriate response to a request, and bias - which need to be accounted for and thoroughly analyzed by researchers (Chumakova et al., 2023b).

The second issue is the responsibility and motivation of supervisors. Researchers are concerned about organizing and supervising undergraduate and graduate students' research work. Currently, a wide variety of manuals and methodological recommendations are available that consider both general provisions of pedagogical support for undergraduate, graduate, and postgraduate research activities (Anufriev, 2004; Belomestnova & Safiannikov, 2012; Chermit et al., 2015) as well as specific research activities for future specialists (Babintsev, 2009; Gorelov & Kruglov, 2014; Novikov & Novikov, 2014). It has been found that teachers tend to approach student consultations formally. Generally, students do not ask questions about thesis preparation, while supervisors are held only responsible for certain formal actions in advising them and are not responsible for the outcome. Additionally, the additional financial compensation is not based on the quality of the thesis or the grade the student received at its defense (Martínez-Roget et al., 2020). In such consultations, it is difficult to assess whether consultations took place or whether the lecturer was only nominally listed as a supervisor. Furthermore, teachers need to update their knowledge. As digital information grows, new applications and instruments associated with ICT emerge every day. As a supervisor, one should guide his or her students in searching for new knowledge and advancing their critical thinking skills (Biryukov et al., 2023)

The third issue is increasing the percentage and quality of employment for university graduates. Many large companies, including those with international participation, are more focused on students trained using advanced techniques (Syzdykova et al., 2022). Therefore, the results of thesis defense carried out in an innovative format with a practice-oriented approach may be of great interest to such companies. As a result, the number of university graduates employed can be increased. The use of ICT in the paradigm of Higher Education 4.0 creates a need for the research, development, and implementation of modern methods of thesis writing (Shkvyr et al., 2023). Therefore, the process of training, including writing the graduation thesis, can influence students, sparking their interest in pursuing a career in a particular organization or motivating them to pursue a master's degree and then a doctorate. By writing their thesis, students can better understand what they want out of their career, as they are often faced with many choices (Buzhinskaya et al., 2022; Yunissov et al., 2022).

The above issues point to a lack of efficient interaction between students and teachers during the thesis preparation process. With new technologies or approaches in teaching, teachers will be prompted to use creative methods for assessing students' knowledge and promoting students' engagement in classroom activities. Problem-based, adaptive, collaborative, active, and self-regulated learning can be used to accomplish this, while at the same time supporting experimental training opportunities (Akishina et al., 2022) and evaluating the university's resources and the traditions it has established throughout its long history.

The objective of this research is to mitigate disparities arising from the growing enthusiasm among educators and students for innovative pedagogical approaches and the underdeveloped implementation thereof as well as to cultivate a heightened sense of academic responsibility and concurrently diminish the likelihood of academic misconduct. The goal of the present study is to compare various approaches for organizing the evaluation process of university graduates in Kazakhstan. This comparison aims to develop principles aligned with Education 4.0 within the broader context of sustainable development. In order to achieve the established goal, various approaches of thesis preparation and defense (qualitatively defined as traditional technologies and case-based approach defined as an alternative way) among students in economics are compared.

2. Background

Researchers believe (Kornoukhov, 2022) that the preparation and defense of a thesis is a crucial form of students' independent learning and research activities. The skills important in conducting research include not only summarizing and referencing scientific information, but also the development of independent scientific thinking, substantiated choice of the object of study, knowledge of modern research methods, and ability to properly organize the scientific search and formalize the obtained results in accordance with the proposed requirements and regulatory documents (Babintsev & Krivets, 2004; Riagin & Shcherbakov, 2015; Vaindorf-Sysoeva, 2006).

However, the vectors of work outlined above are often only proclaimed. In this case, in view of the dichotomy of form and content, the student receives no instruction on the algorithm of writing a thesis and is left to think haphazardly about the balance and complex interaction of these two components. We believe that a diploma thesis is a clear indicator of the student's ability to resolve the described problem (Kornoukhov, 2022), which is critically important in professional practice. The presence of an established algorithm and a system of "student – student", "teacher – student", and "teacher – students" interaction does not deprive the graduate of independence in the preparation of the thesis. On the contrary, it provides them with an opportunity to develop their ideas and a creative approach to writing the thesis. In particular, if the thesis preparation process involves some elements of joint work on a common problem- based project, motivation and responsibility will rise quickly. Declarative and formal interaction between the teacher and students in the preparation of theses, as previously noted, is a large-scale problem in universities, as it results in a rising number of works with academic plagiarism. The latter is defined as academic behavior marked by the following five cumulative characteristics:

> when a person (1) uses the words, ideas, and results of work (2) that belong to a different definite source or person (3) without referencing the source it is borrowed from (4) in a situation where an indication of original authorship is legitimately expected (5) for the purpose of obtaining some benefit, honor, or advantage, not necessarily of a monetary nature (Levin, 2018, p. 143).

The resolution of this problem focuses on developing administrative (e.g., strict sanctions) or technical (e.g., checking theses with antiplagiat.ru) approaches. For this reason, many teachers see today's accessibility of information not as a great good and achievement, but as a disaster, which makes it impossible to verify that the student has completed the work independently, given that the completion of a diploma thesis assumes independent selection of literary sources, writing of the text, systematization of material, and substantiation of conclusions (Katsko & Kokorina, 2021; Shmeleva, 2016). Furthermore, plagiarism as a violation of academic integrity both affects the positive image of the institution and damages the reputation of the faculty member.

At present, there are no universally recognized methods to encourage students to maintain academic integrity and develop motivation (Mabrouk et al., 2023). Therefore, as a new technology for assessing the acquired knowledge, we propose the preparation and defense of theses based on the case-based approach.

The choice of this approach is explained by the broad popularity of case studies in the training of economics students. A study by Maulana (2023) suggests that the case-based approach is the most efficient since it provides for the development of the key professional competencies of economists and managers in the educational process. Among these skills are communication skills, leadership, and the ability to analyze a large amount of unordered information in a short period of time and make decisions under stress and insufficient information (Bagirova & Burykhin, 2012). At present, the case-based approach is a rapidly and dynamically developing model of training. Contemporary researchers work to perfect the methods of incorporating the case-based approach into the educational process, create integrated educational programs and courses, and find innovative teaching methods to make the university graduate competitive in the labor market and interesting to the employer.

Today's employer demands not simply a trained specialist but a graduate who is ready to perform their job responsibilities with high quality and creativity (Klimovskikh et al., 2023). This dictates the need for constant improvement of students' theoretical and practical training. An influential aspect of professional competence is the ability of the future specialist to resolve the tasks defined by the real conditions of professional practice (Cruz-Sandoval et al., 2023; Diaz et al., 2022).

Based on the opportunities to implement cases in the educational processes, researchers distinguish practical, educational, and research cases. Proceeding from content, cases are divided into structured, small sketches and large unstructured types (Bagirova & Burykhin, 2012). We conclude that in writing theses, large unstructured cases of about 50 pages are the most challenging type of educational task. They provide detailed information, sometimes excessive or confusing. Information critically important for analysis can be missing. Solving these cases requires a long time to read and analyze the information, which can be utilized in organizing students' independent work (Smolianinova, 2000).

When preparing large unstructured cases, students also solve the main tasks of writing diploma theses (Alekseev et al., 2006; Aliev & Zabolotskaia, 2003; Lushnikov & Tarusina, 2018):

- systematization and deepening of theoretical knowledge in respective academic disciplines;
- development of the skills of applying theoretical knowledge to solve specific practical tasks;
- development of each student's ability to combine the elements of referencing and creative research, which simultaneously provides an objective analysis of the material on the studied topic that has been developed by predecessors and makes the young scientist draw independent observations and conclusions, i.e., facilitates their ability to conduct research;
- mastery of the methods of competent use, drafting, and editing of scientific writing;
- development of competencies associated with professional practice.

Thus, implementation of the case-based approach can increase motivation and responsibility in both students and teachers. In students, apart from developing their personal abilities, case studies can become a certain barrier, preventing misconduct and the exclusive use of the capabilities of AI when preparing a diploma thesis. For teachers, the case-based approach provides an opportunity to develop professionalism associated with game techniques, cases, and master classes, techniques for managing post-game discussion and getting out of difficult situations, and methods for determining educational efficiency.

The preparation and organization of a methodological experiment requires the formulation of a research hypothesis. Our hypothesis relies on the assumption that the effectiveness of students' thesis preparation and defense will differ depending on the model of the organization of thesis preparation and defense. Thus, the model employing the method of unstructured cases is hypothesized to be more effective in the process of thesis preparation and defense by students specializing in audit and human resources management specialties.

3. Method

3.1. Research Design and Participants

This study adopted an experimental research design in line with the aim of the study. Using a methodological experiment, different approaches for organizing thesis preparation and defense by economics students were examined.

The pedagogical experiment included 160 students specializing in audit (80 students) and human resources management (80 students), who were divided into experimental [EG] and control [CG] groups, 80 students each. The number of teachers involved in the study was 27. One teacher could work with both the EG and CG.

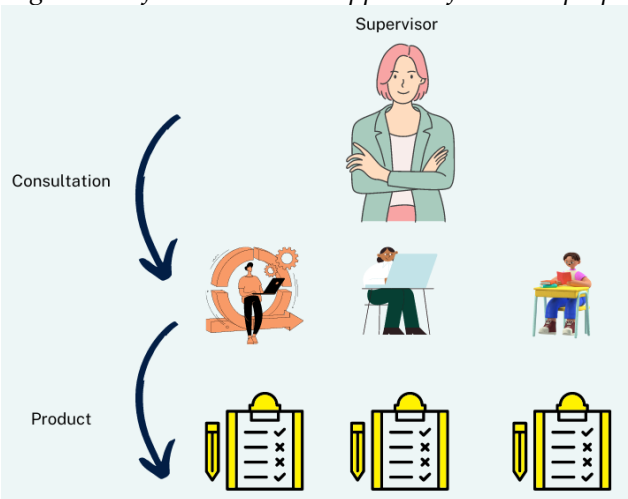
3.2. Context

This research, conducted under the ethical permission number 2023-412, was carried out in strict accordance with the ethical guidelines and regulations set forth by K. Zhubanov Aktobe Regional University's Ethics Committee. All participants in this study provided informed consent, and their identities and responses were kept confidential throughout the research process.

Students were offered to choose the approach they wanted to follow in preparing and defending their theses. Those students who made up their minds had to write an application and submit it to the university faculty. Thus, the EG was intended to have 40 students specializing in audit and 40 students specializing in human resources management. The CG should have had the same composition. Places in the EG were filled first, so the remaining students were assigned to the CG automatically.

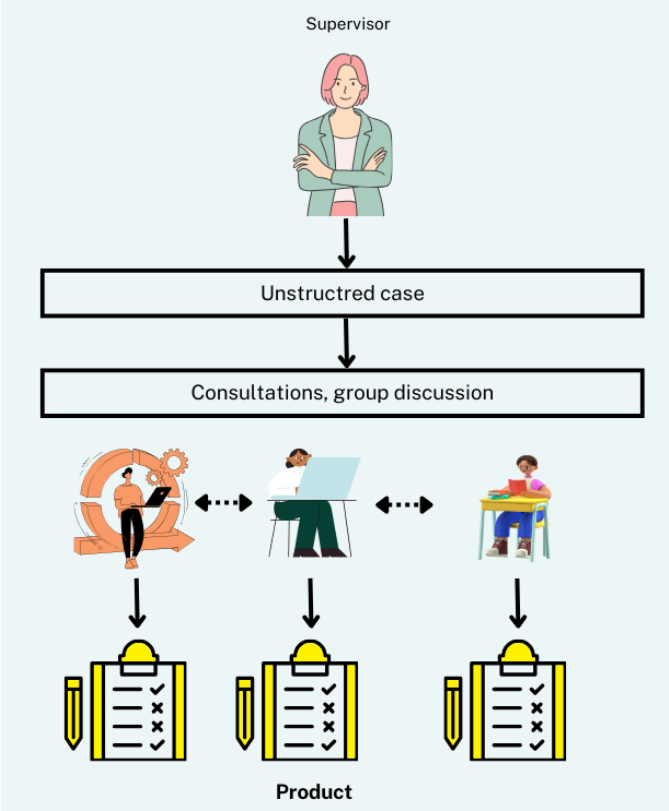
Figure 1

Algorithm of the traditional approach for thesis preparation by students



The grade depends on the graduate paper completed according to the rules of execution and the student's individual defense. The structure of the thesis is at the discretion of the teacher and the student, there is no clear algorithm for writing the thesis.

Figure 2
Approach for thesis preparation by students using unstructured cases



The grade depends on the ranking of the team in which the student participated using an unstructured case study. The diploma work performed according to the rules of execution and the student's individual defense includes two elements: a section of a general case study that the student prepared (i.e., made an individual presentation on their section of the case study at the team defense of the case study) and an overview of a problem related to the case study topic of the student's choice.

Students in the CG worked according to the traditional model (Figure 1). They independently chose the topic (together with the teacher or from the provided common list of ready-made topics), approved it with the teacher, prepared the text of the graduation thesis, prepared the presentation, and defended the thesis at the appointed time of defense.

Students in the EG were prepared and defended their theses following the new approach (Figure 2), which is elaborated below.

The organizer of the experiment and the teachers developed 20 unstructured cases. Each of them was divided into four sections, which conditionally provided: 1) a study of the proposed situation (case), detailed analysis of the problem, 2) theoretical solution of the problem (literature review), 3) discussion of possible solutions to the problem (comparison, analysis), 4) development of the best solution (substantiation). The diploma thesis was prepared within the framework of this case.

Before starting their work, students needed to coordinate, independently divide into 20 groups of four people, and allocate responsibilities within their group. Following the same principle, each group chose a scientific advisor, who coordinated their work and helped in preparing the cases throughout the work process.

Students were also required to satisfy the Rules for the Completion of Diploma Theses approved by the university. Under these requirements, 1) a diploma thesis was accepted for

defense if its total level of originality was no less than 72% according to the antiplagiat.ru system; 2) the volume of the theses had to be at least 50 pages, including the cover page, all sections, and references. In the first part of the thesis, students were required to write a review of any topic of their choosing on the subject of the thesis, and the second half had to present the completion of one of the sections of the case study. This review was evaluated separately.

The process of students' work on theses with cases after separation into small groups was organized as follows. In the first stage of diploma thesis completion, the teacher explained its topic and goal to the students, described what theoretical material corresponded to the case topic, and recommended appropriate manuals, textbooks, or lecture topics. In view of the high difficulty of the cases offered for writing theses, they were handed out in advance (a week prior) for students to be able to examine them. The fulfillment of the tasks stipulated in the case is based on a detailed review and understanding of the facts given in the case conditions. Therefore, the chief task in examining a case is to read its conditions carefully. Upon the first reading of the text, the teacher's objective was to make sure that all students understood all the nuances of the situation and identified key facts but did not make any conclusions or decisions. The main goal was for them to have a holistic impression of the case content. In the process of thesis preparation in groups, the teacher acted as a moderator tasked with organizing the group's work and ensuring that all its members actively participated in joint discussions of the case. In group discussions, students debated and agreed on the main issues raised in the case. An important condition of successful thesis preparation was the distribution of functions between teammates. Naturally, the information given in a case study is incomplete and more focused than in real conditions. To compensate for the lack of some facts, students had to make informed assumptions based on the conditions of the proposed case, rather than their own assessments. However, case analysis also provided for students' independent search for additional information.

Each member of the team thus acted as a specialist in certain issues, searching for additional information on them and developing recommendations within their area of expertise. This ensured that each student actively participated in joint work. All team members stated their findings in writing and added them to the general structure of the case, after consulting with other group members. The defense of theses in the form of group cases was held publicly and required the participation of all team participants, each reporting on their section of the work. Each student's speech was planned to be concise (within 15-20 minutes). Other teams were waiting for their turn to act as listeners and, sometimes, as opponents. This form of defense was intended, in addition to the assessment of knowledge, to evaluate public speaking skills.

Once the stage of thesis defense ended, based on the results of the speeches, an overall rating of works was formed according to the evaluation of work on the case study. The evaluation focused both on the overall presentation of the team and the personal contribution of each team member.

3.3. Data Collection

The results of the defense were graded through a double evaluation: the assessment of the case study overall and of the individual performance of each participant. The final grade for the thesis was given after checking the reviews of problems related to the subject of the case study.

Scores for the overall execution of the case study were given according to defined criteria, i.e. the quality of oral presentation of the case, organization of actions, the depth of case development, the depth of development of each section of the case, and the clarity of the material, on a 10-point scale. Each group could score from 0 to 10 points on each criterion. Thus, the maximum score was 50 points. Based on the results of all defenses, an overall rating of all groups from the 1st to 20th place was compiled. In this process, each student received both their personal grade for individual performance and a grade defined by the evaluation of the case.

Students whose work ranked 1st through 5th and who received 5 points for their individual performance were to receive an "Excellent" grade. For students who received a "Good" grade for their review of a problem related to the subject of the case but whose work ranked 1st through 5th,

the grade was to be raised to "Excellent" (however, places 1 through 5 were ultimately occupied only by those teams, each member of which received an "Excellent" grade for individual performance).

Students whose papers ranked 6th through 10th but who received an "Excellent" grade for their individual performance could not qualify for an "Excellent" final thesis grade because of their ranking. Exceptions were allowed if the student had high academic performance and got an "Excellent" grade for their review of a problem related to the case subject, in which case the commission could raise their final thesis grade from "Good" to "Excellent".

Students whose theses were in 11th to 15th place in the rating but who got 5 points ("Excellent") for individual performance could receive "Excellent" as their final grade only based on an individual decision of the commission and under the condition that their review of a problem related to the case was graded "Excellent".

The individual grades of students whose theses were in the last five positions in the rating, 16th through 20th, were lowered by 1 point. For example, if such a student got an "Excellent" both for their individual performance and review of a problem related to the case subject could only receive a "Good" as their final thesis grade.

Thus, the final mark for the diploma thesis was defined by three elements: 1) The ranking of the team in which the student participated when preparing the case, 2) Individual speech of the student at case defense, 3) Grade for the review of the student's chosen problem related to the subject of the case.

A rating of teachers was made based on the score of the group they supervised. That is, the teacher whose team took 1st place received 20 points, the teacher with the team in 2nd place was given 19 points, etc. Each teacher could supervise two groups at maximum, in which case they were awarded an average score based on the results of both supervised groups. This rating affected teachers' financial incentives. While the teachers who worked with the CG received benefits regardless of students' grades, for teachers who agreed to participate in the experiment, the university administration was able to allocate additional money from extra-budgetary funds to award to those whose students received high marks. This procedure was necessary to increase teachers' motivation to take part in the experiment. Yet even with increased payments to teachers in the EG, consent was given only by the minimal number of teachers necessary to conduct the experiment.

3.4. Data Analysis

Special attention should be paid to control in the experiment, which assumes quality observation of the results of the experiment. Proceeding from the context of our study, the object of control is defined as the level of objective knowledge assessment, which depends on the originality of completed theses. A comparison of the originality of theses in the EG and CG was performed using the private online service "Antiplagiat VUZ" (antiplagiat.ru). To determine the most efficient model for organizing diploma thesis preparation and defense, the research results were analyzed using through *t*-test.

Additionally, surveys of students and teachers were carried out at the end of thesis preparation and defense. Students were asked questions about employment upon graduation. In particular, it was asked whether the student worked in their specialty while preparing the thesis, whether and how thesis preparation affected their employment, and whether, in their opinion, writing the thesis was useful in terms of developing professional skills. The survey of teachers concerned the challenges of working with students in the course of thesis preparation and defense, as well as the expediency of introducing monetary payments to teachers depending on the results of the defense of the theses they supervised.

4. Results

Results on the originality of completed theses in the EG and CG are provided in Table 1.

Table 1
Comparison of the originality of final qualifying papers of EG and CG students (mean values)

Group	*N*	*Originality level**	*t-test*
Experimental Group	80	94.2%	4.528
Control Group	80	75.8%	

Note. * Originality level – average level of originality in each group. The average number was calculated using a program.

Table 1 demonstrates a statistically significant difference between the originality of theses in the EG and CG (temp = 4.528, $p < .01$). This means that the originality of completed theses in the EG is significantly higher compared to the CG (H1).

In the control group, students worked more with ready-made material, and they spent more time paraphrasing existing text. For example, a student from the control group confirmed these words by saying: "I found a lot of different material when preparing the work, but when I checked it through plagiarism detection software, I spent a whole month correcting it. It was very difficult because I had to use specific text adjustment algorithms to solve the cases." Thus, based on the criteria of originality, it can be argued that the model of thesis preparation with the use of unstructured cases is more effective than the traditional model.

In Table 2, the qualitative findings related to the influence of the process are presented.

Table 2
Results of the survey of students in the EG and CG about the influence of the process on the choice of the place of work

Response to…	*EG*	*CG*
Worked while preparing the thesis	9	20
Decided on the place of work, the thesis preparation process had no influence	14	14
Decided on the place of work, the thesis preparation process changed the choice	18	15
Has not decided on the place of work, the thesis preparation process helped in making the choice	19	11
Has not decided on the place of work, the thesis preparation process did not help in making the choice	20	20

Note. EG: Experimental group; CG: Control group.

According to Table 2, the opinions of the students vary across different categories. There is a minority of EG students that worked while preparing the thesis, while it is a majority of CG students. Interestingly, 20 students in each of the EG and CG claimed that they did not decide the place of the work, nor did the thesis preparation process help them to do so.

Table 3 presents the main difficulties encountered by the students according to the teachers' views. As can be seen from the Table 3, the majority of EG had difficulties regarding the unstructured cases and lack of material, while it is the originality of the thesis for the majority of CG. This is followed by the lack of experience, high workload of teachers, difficulties regarding organization and lack of motivation for EG. In the same vein, the students in CG had difficulties in the search of the original material, motivation regulation, organization of the process and high workload of the teachers.

Table 3
Primary factors that affected students' preparation for thesis defense

Factors	*Percentage*
Experimental Group	
Difficulties with preparing unstructured cases, lack of material	86.4
Lack of experience working with unstructured cases for teachers and students	43.2
High workload of the teacher	38.4
Difficulties with students' organization when preparing the thesis	27.7
Problems with students' motivation when preparing the thesis	24
Control Group	
Issues with the originality of diploma theses	81.4
Students' difficulties searching specialized/original material for the thesis	37
Problems with students' motivation when preparing the thesis	33.3
Difficulties with students' organization when preparing the thesis	22.2
High workload of the teacher	18

5. Discussion

The conducted study demonstrates that the model of thesis preparation with the use of the case study method is more effective compared to the traditional mode, as the results reveal a higher originality of theses. In addition, the process of thesis preparation was more successful in motivating students to write a quality work, which influences students' professional orientation in choosing the future place of work, as well as gives teachers an opportunity to improve their professional competence and gain new skills in the preparation and defense of diploma theses. According to teachers, among the factors that created difficulties in students' preparation of theses, problems with motivation were less significant in the EG (this answer option was chosen by 9.3%). Therefore, it can be argued that the applied approach is more suitable and does provide real useful practical knowledge.

Several prior research works (Jensen & Rorbaek, 2022; Walsh et al. 2021) have demonstrated that hands-on, practical approaches in education tend to enhance student engagement and foster a deeper understanding of the subject matter. Furthermore, studies comparing traditional teaching methods to innovative (Al-Said, 2023), applied techniques have consistently shown that the latter leads to higher levels of student motivation and improved retention of knowledge

From the methodological point of view, the model of thesis preparation using the case study method improves teacher-student interaction, as they had to learn the method of working with unstructured cases together. Various studies have shown that collaborative and interactive teaching methodologies, such as case-based learning, facilitate stronger teacher-student relationships (Sartania et al., 2022). These approaches require educators and learners to actively engage in problem-solving and critical thinking together (Cui & Teo, 2023), resulting in a more dynamic and participatory educational experience.

The version of thesis preparation and defense approach with unstructured cases gave us the opportunity to create experimental conditions for students as similar as possible to the realities of managerial decision-making in the business environment. In these conditions, students need to engage their individual and personality-oriented capabilities to set and resolve tasks, show motivation to conduct independent research, demonstrate the knowledge accumulated throughout the years of studies, and gain more experience dealing with a large number of information sources and analyzing them.

The obtained results lead us to the following theoretical and practical conclusions:

Firstly, practical introduction of the proposed methodology of thesis preparation and defense with the use of the case study method requires solving the issue of developing these cases. The cost of research for writing case studies can range from 500 to several thousand dollars (Bagirova & Burykhin, 2012). As a rule, major Western universities or business schools have a separate

budget line for this, and a significant part of it is formed from profits the university gets from selling its textbooks and manuals to students. The budgets of universities and business schools in Kazakhstan do not provide for such expenses. Therefore, as our study shows, teachers face great difficulties in preparing these cases, which further increases their workload.

Secondly, the academic experience recorded in research demonstrates that it is critical to have enough professors who can consult a reasonable number of students and provide feedback (Ferrer-Martí et al., 2015). In our study, due to established practices and certain university traditions, teachers in the CG note fewer difficulties faced by teachers and students in the process of preparing and defending theses. The EG shows more factors affecting students' preparation for defense. Lacking professional experience in working in such a situation, teachers had to use all the accumulated pedagogical skills to adapt to these circumstances. This demonstrates the utmost importance of teachers developing adequate skills to work with unstructured cases. University administration, in turn, has to create special conditions for teachers to make sure that preparation for thesis defense does not result in destructive and conflict situations in the university.

Thirdly, our research fully confirms the thesis that the acquired training and professional satisfaction from the obtained professional knowledge upon successful graduation can affect employment opportunities, as well as personal development (Hummel, 2018; Liu et al., 2023). On the other hand, if a student is already employed at the time of writing their thesis, it becomes difficult for the teacher to apply motivational methodologies to stimulate interest in learning. When giving students consultations, teachers are more focused on making sure that they comply with the rules of preparing theses and perform the necessary procedures using technological tools, as well as on identifying plagiarism from other people's works.

The practical contribution of case studies in the process of thesis preparation and defense is the significant increase in the originality of papers submitted for defense. This result is especially valuable given the urgency of solving the problem of academic honesty and the consequences of its violation of today's educational realities (Mezenin & Markova, 2019). Cheating, when the thesis is completed by specialized agencies, cannot be tolerated (Shmeleva, 2016). The results of our study demonstrate that we achieved the most significant results in solving this problem.

Of no less practical significance is the interest of employees in university graduates, which directly depends on specialists' competitiveness. Among other things, professional competitiveness lies in the student's responsibility for the results of their education. Irresponsible attitude to the results of learning activities explains the decline in the quality of education and results in the graduation of incompetent specialists (Kicherova et al., 2013; Levin, 2018).

6. Conclusion

We believe that the introduction of the case study method in the process of diploma thesis preparation by economics students improves the efficiency of the learning process, as it resolves a number of tasks important not only for teachers but also for students. First, we observed a significant rise in the originality of completed diploma theses in the EG compared to the CG. Second, the motivation of teachers increased because they engaged in the process more actively and were interested in their students taking higher places in the common rating. Third, the conducted experiment drew the attention of HR specialists from large companies, and their interest in graduates increased: students from the EG received 17% more interview invitations than CG students.

Improving the quality of students' training requires improvement of all forms of the educational process. An important direction of research work in this process is writing and defending a thesis. Experimentally, the case study approach was found to be more effective than the traditional approach. We argue that the developed model of thesis preparation and defense employing case studies promotes students' motivation, especially their recognition of personal responsibility for the results of their work. This indicates the methodological significance of implementing the case study method in the process of writing and defending a diploma thesis. The

greatest success of our study is the increased originality of theses and the higher competitiveness of graduates in the labor market, which allowed them to attract the attention of various employers.

Among the limitations of the study, we should note, first and foremost, the fact that the obtained results can be extrapolated only on students who had practical classes with various types of cases during their studies. This is due to the fact that work with unstructured cases is labor intensive for both students and teachers. Another limitation of the study is the sample size of students who participated in the experiment.

Finally, a prospect for further research may be the development of more cases with the involvement of potential employers so that it would be possible to more actively implement our proposed technology of thesis defense in educational practice.

Author contribution: All authors have made sufficient contributions to the study and agree with the results and conclusions.

Data availability: The data supporting the findings of this study are available upon request. Interested researchers may contact the corresponding author for access to the data.

Declaration of interest: The authors declare that no competing interests exist.

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