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Lecturer' and students' perspectives on digital technology use in organizing and writing projects

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ABSTRACT

This research aims to determine the problems experienced by lecturers and students in writing projects in order to determine the importance of technology in the organization of project activities. In this context, 24 students and 24 lecturers were included in the study. Six main themes were determined using a semi-structured interview form (general information, project preparation, project writing, cooperation and support, evaluation and feedback, result and presentation). It was concluded that 60% of the students and 20% of the faculty members had no previous experience in project writing. Lecturers and students (30%) had difficulty in finding a project title during the project preparation phase. A total 30% of the students did not know project writing, 50% of the lecturers had lack of knowledge and had problems in accessing the literature. Lecturers (70%) and students (60%) had no problems in finding a project team. Lecturers and students had some problems in sharing the project results, each project increased the knowledge skills of lecturers and students and created new project ideas. It is thought that training activities should be organized for lecturers and students on project writing and what kind of digital technologies they can benefit from in order to create new project ideas.

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1. INTRODUCTION

Project writing is an important part of academic and professional life, but it is also fraught with various difficulties and problems. Time management, resource discovery, and effective information organization are common challenges faced by project writers [1]. In addition, writers are under pressure to produce projects that meet specific requirements. These difficulties affect academics as well as students, and they frequently have a detrimental effect on the caliber and timeliness of project work [2].

Various methods and resources have been created on global platforms to address the issues that arise during the project writing process. For instance, significant efforts have been made to spread best practices in writing and project management through the European Union's Horizon 2020 program [3]. This program provides a wealth of tools for project writers and promotes research and innovation projects. In addition to money, Horizon 2020 offers resources and instruction to help with project planning, execution, and reporting.

According to Tenhunen-Lunkka and Honkanen [4], these platforms provide project writers with training and advisory services to assist them in advancing their knowledge and abilities. The project writing process can also be aided by the use of internet databases and libraries. Under the framework of these programs, workshops, seminars, and webinars are held to provide project writers with both theoretical and practical knowledge [5].

When writing a project, teachers and students encounter a variety of challenges, worries, and issues [6]. Pupils frequently struggle to find enough materials [7], manage their time effectively [8], [9], and use proper academic language [10]. Students may experience tension and anxiety due to the project writing process's intricacy and duration [11]. Students who do not get enough direction and assistance in particular could find it challenging to finish their assignments. However, in addition to their heavy workloads in the classroom and administration, faculty members also face bureaucratic roadblocks when it comes to project writing and management [12], [13]. In addition, they might be worried about obtaining funds, locating appropriate partners for collaboration, and maximizing the influence of project results [14]. Lack of digital literacy can also make it difficult for teachers and students to use digital tools and technologies efficiently [15]. These factors negatively affect the efficiency and quality of the project writing process, creating significant problems at both individual and institutional levels.

The difficulties encountered in the project writing process can be overcome with digital technologies. In the literature, it is stated that these difficulties make project management processes difficult [1]. Especially the difficulties in time management and access to resources can be significantly reduced with the effective use of digital technologies. Especially the practices in projects such as Horizon 2020 of the European Union reveal how digital tools facilitate project writing [3]. When analyzed in this context, different countries support their students and teachers in writing projects and thus, scientific activities increase in a competitive environment. For example, in the USA, project-based learning is supported through the National Science Foundation (NSF) and students are offered guidance on project writing [16]. In Finland, educational institutions have developed systems to facilitate project writing through digital tools, and teachers are encouraged to play an active role in this process [4]. When these studies are analyzed in depth, it is thought that it is very important to know the problems experienced in project writing in some countries and the technological possibilities used to cope with these problems.

Unlike the existing literature, this research analyses the effects of digital technologies on the project writing process from both student and lecturer perspectives. While the literature generally focuses on the advantages and use of digital tools, this research specifically focuses on specific challenges in the project writing process and how these challenges can be overcome with digital technologies. The research aims to identify the role and effectiveness of digital technologies in the project writing process, to understand the barriers and concerns encountered in this process, and to reveal how the use of these technologies improves the quality of projects. In this context, this study will seek answers to questions such as what problems teachers and students experience in writing projects and what the importance of digital technology is in solving these problems. In this context, the hypotheses of our research were determined as “teachers and students experience some problems in the project writing phase and digital technology usage knowledge affects the project writing phase.”

2. METHOD

2.1. Research design

In this research, a case study was preferred among qualitative data collection techniques [17]. In this context, it was aimed to determine the knowledge and skill levels of university students about project writing. In line with this purpose, appropriate questions were determined, answers to the questions were sought in the natural environment of students and academicians and then analyzed.

2.2. Research population

The sample of this study was purposively selected [18]. For this purpose, students attending formal education in any department of universities and participants who were tenured faculty members at the university were included in the study. Data saturation was taken as a criterion in the study. As a result, the researcher keeps interviewing as long as new information is obtained and ends it when saturation prevents the researcher from obtaining new information [17]. In this case, the study included 24 teachers and 24 pupils.

While determining the sample group of the research, attention was paid to the students studying at the university and teachers teaching in different academic fields. The participants consisted of university students and teachers in Astana, Almaty, and Taraz Provinces of Kazakhstan. Participants who did not continue formal education and academics who were assigned to give lectures were not included in the study. Students were selected from individuals in all classes in formal education. Faculty members were selected

from individuals with different years of experience. In this way, the heterogeneity of the project sample was ensured. In addition, the fact that the academics consisted of faculty members from different faculties provided an interdisciplinary perspective to the project writing process and increased the generalizability of the research results. For this research, the necessary ethics committee permission was granted on 16/02/2024 with the decision of SDU University, Faculty of Humanities Ethics Committee (Approval no: 2024/7).

2.3. Instrument

In this study, the semi-structured interview form method, which is one of the qualitative data collection tools, was used in order to identify the problems encountered by teachers and students while writing projects and to determine their knowledge and skill levels about digital technologies [19]. The semi-structured interview forms used as data collection tools were created by considering the hypotheses and objectives of the study and were applied separately to both teachers and students. Open-ended questions were formed in these semi-structured interview forms. These questions were related to the participants' project writing process from the planning to the presentation of the project results. The form was also revised in accordance with the main topics identified by the researchers. Firstly, expert opinion was taken and then the literature was analyzed in depth. For the originality of the study, the opinions of all experts were taken and the form was updated according to these opinions [20]. The interviews were conducted face-to-face so that the participants could express themselves in a comfortable environment. Each interview lasted approximately 30-45 minutes and the data obtained were recorded. In this context, the participants were asked for general information about project writing, project preparation process, project writing process, cooperation and support, evaluation and feedback, and conclusion and presentation, and their answers were recorded.

2.4. Validity and reliability test

The interview form went through several stages. The prepared questions were first analyzed by two academicians who are experts in qualitative research. After the review of the academicians, the questions were finalized. Then, the questions were analyzed by a language expert and their suitability in terms of grammar was examined. Firstly, a pilot study was conducted with 1 teacher and 1 student, and the questions were finalized after the feedback was received.

The prepared form consisted of two parts. In the first part, demographic information of the participants was obtained. In the second part, there was an interview form with a total of six questions under six headings. The interviews were conducted in a flexible environment that would allow an in-depth examination of the information provided.

The reliability of the semi-structured interview form was examined in this study using the inter-coder reliability method [21]. Two different researchers examined the data. After the interview data was individually coded by each researcher, the inter-coder consistency was determined by comparing the codes. Using Cohen’s Kappa coefficient, inter-coder reliability was assessed in this procedure [22]. A high degree of inter-coder reliability is indicated by a Kappa coefficient greater than 0.60. This technique was crucial in guaranteeing the study’s dependability because it allowed researchers to confirm that the data were consistently evaluated and processed.

2.5. Data collection process

Between March 7 and March 30, 2024, staff and students at Kazakh National Women's Teacher Training University provided the study with the data. The goal of the study was explained to the participants, and they were also advised that participation was entirely voluntary. Furthermore, a voice recorder was utilized with each participant's permission. Each interview lasted an average of thirty to thirty-five minutes, and they were held in a suitable meeting room at the university.

2.6. Analyzing the data

The data obtained in this study were analyzed using qualitative data analysis methods. The data collected through the interview form were analyzed by content analysis method and the data were structured by determining themes and sub-themes. Content analysis is the process of systematic classification, coding, and interpretation of qualitative data. The data obtained through the semi-structured interview form used in the research were analyzed by the content analysis method [23]. All interviews were recorded with a voice recorder and then transcribed word by word. The transcription process was done carefully to ensure the accuracy and integrity of the data. The transcribed data were coded in line with the aims of the study. During the coding process, repetitive expressions, concepts and themes were identified. The coding process was done manually and the responses of each participant were analyzed in detail.

3. RESULTS AND DISCUSSION

Table 1 shows the demographic information of the participants. Among the students, 70% were female (n=14) and 30% were male (n=6). Among the teachers, 80% were female (n=16) and 20% were male (n=4). The mean classroom experience of the students was 1 year with a standard deviation of 0. The mean age of the students was 18.3 years with a standard deviation of 0.66. The mean working experience of the teachers is 14 years with a standard deviation of 9.07. The mean age of the teachers is 34.6 years and the standard deviation is 8.47.

Table 1. Demographic information of the participants

Participants	Group	Gender	Class/work experience	Age
P1	Student	Female	1	29
	Teacher	Female	26	46
P2	Student	Female	1	18
	Teacher	Female	24	45
P3	Student	Female	1	18
	Teacher	Female	25	47
P4	Student	Male	1	18
	Teacher	Male	16	38
P5	Student	Female	1	18
	Teacher	Female	23	46
P6	Student	Male	1	18
	Teacher	Male	24	40
P7	Student	Female	1	18
	Teacher	Male	24	39
P8	Student	Male	1	18
	Teacher	Male	24	40
P9	Student	Female	1	19
	Teacher	Female	18	41
P10	Student	Female	1	18
	Teacher	Male	14	25
P11	Student	Female	1	18
	Teacher	Male	19	42
P12	Student	Female	1	18
	Teacher	Male	4	32
P13	Student	Male	1	20
	Teacher	Male	6	25
P14	Student	Female	1	18
	Teacher	Male	5	25
P15	Student	Female	1	19
	Teacher	Female	4	28
P16	Student	Female	1	18
	Teacher	Male	4	25
P17	Student	Male	1	18
	Teacher	Female	5	25
P18	Student	Female	1	18
	Teacher	Female	3	27
P19	Student	Female	1	20
	Teacher	Female	6	28
P20	Student	Male	1	19
	Teacher	Female	5	28

In Figure 1, the general knowledge of the participants on project writing was analyzed. Under this heading, the project experiences of the participants were asked. Accordingly, 60% (n=12) of the students reported that they had some experience in project writing, while 40% (n=8) reported that they did not have any experience in project writing. Among the teachers, 70% (n=14) had less than 10 years of project writing experience, 10% (n=2) had more than 10 years of experience, and 20% (n=4) had no project experience.

Figure 2 analyses the project preparation processes of the participants. In this context, the answers of the participants to the question of what is the most important problem they experienced while determining the project topic were analyzed. In this context, 20% (n=4) of the students reported that they had difficulty in determining their field of interest, 20% (n=4) had difficulty in accessing information, 30% (n=6) did not know anything about this subject, and 30% (n=6) had difficulty in finding a project topic. It was concluded that 10% (n=2) of the teachers had no information on this subject, 20% (n=4) had problems with method and technology, 30% (n=6) had problems with the project topic, and 40% (n=8) had problems with lack of information and time.

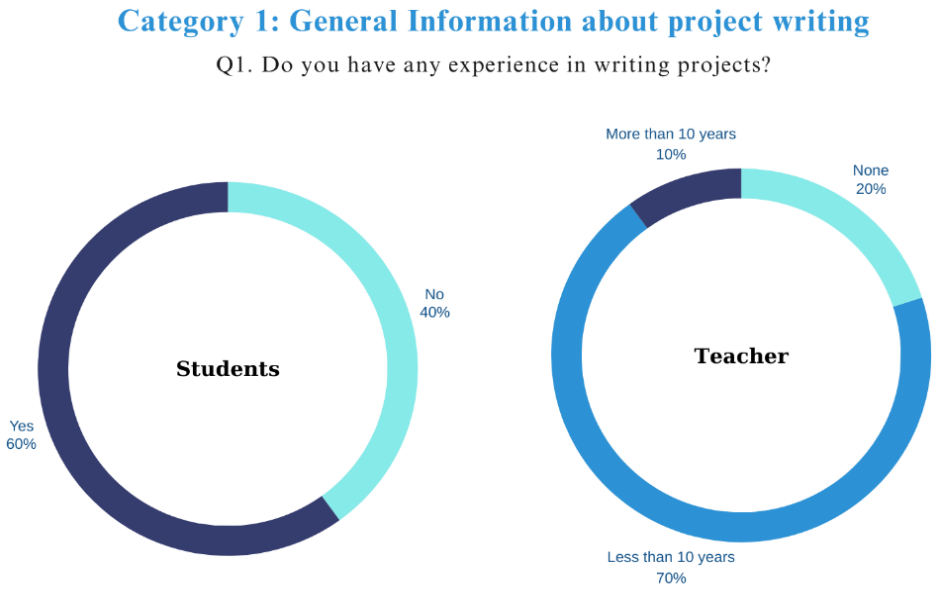

Figure 1. Project experience of participants

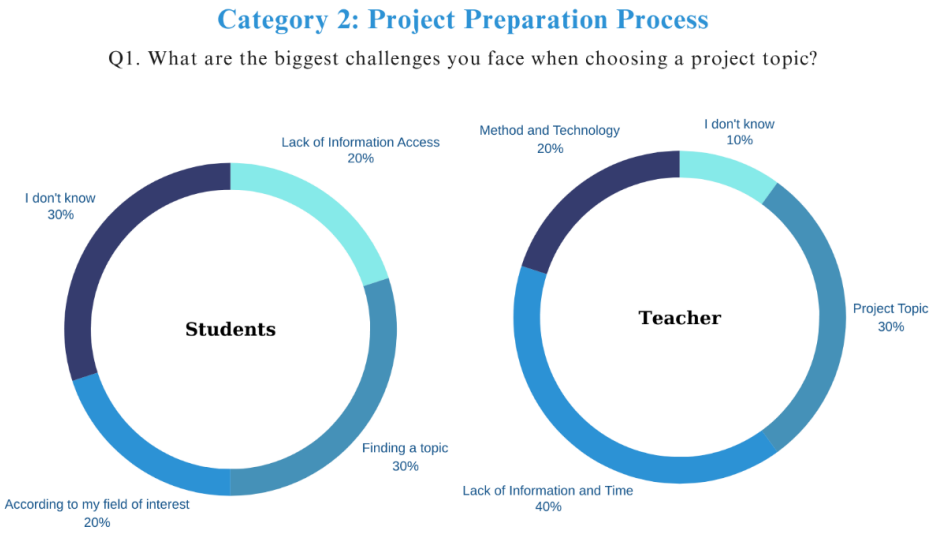

Figure 2. Project preparation process

In Figure 3, the problems experienced by the participants during project writing are analyzed. In this context, the participants were asked to indicate the most difficult situation during project writing. Accordingly, 20% (n=4) of the students reported that they had problems in project writing techniques, 20% (n=4) reported that they had problems in taking current projects as examples, 30% (n=6) reported that they had problems in ensuring the originality of the project, and 30% (n=6) reported that they could not make any comments because they did not write a project. A total of 10% (n=2) of the teachers reported that their competencies in this subject were insufficient, 20% (n=4) reported that the prediction and reality of the project outputs, 20% (n=4) reported that the method of the project, and 50% (n=10) reported that lack of information and lack of literature was the most important problems in the project writing process.

Figure 4 analyses the participants' cooperation and support during project writing. Accordingly, it was determined whether the participants received any support from their peers or teachers during project writing. Accordingly, 60% (n=12) of the students said that they always received support, 20% (n=4) often, and 20% never received support. Among the teachers, 70% (n=14) stated that they always received support, 20% (n=4) frequently, and 10% (n=2) never received support.

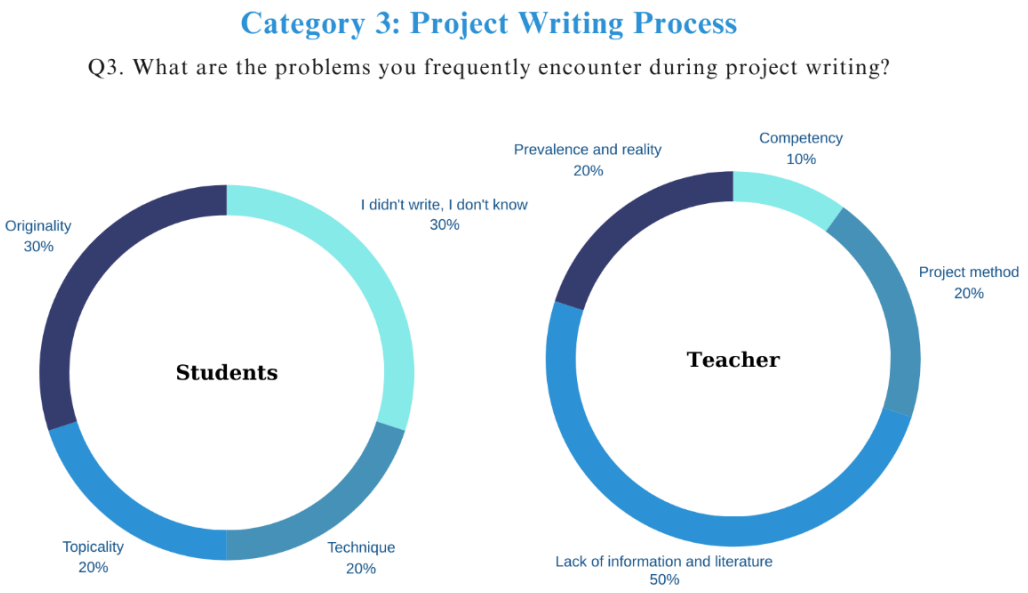

Figure 3. Project writing process

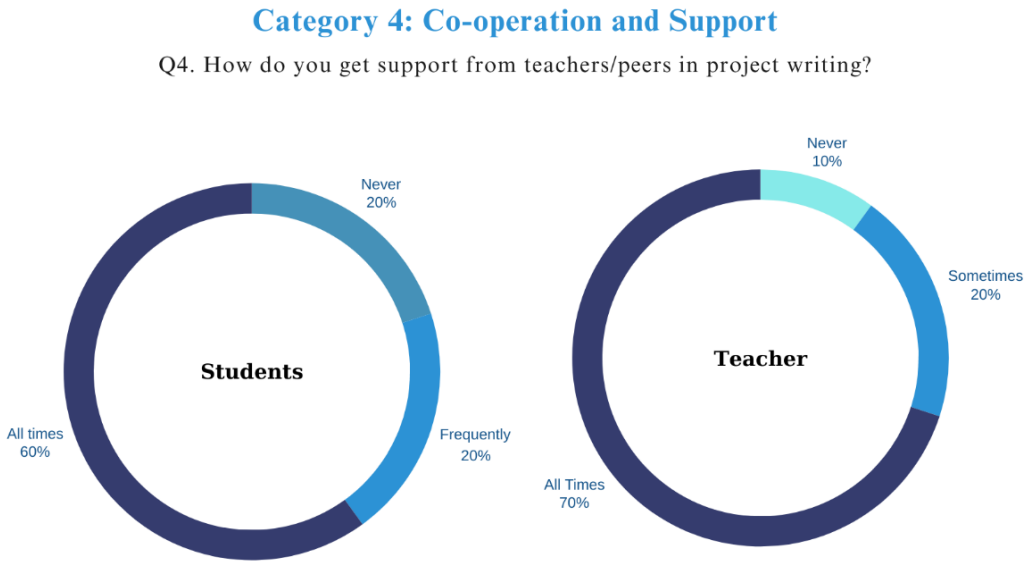

Figure 4. Co-operation and support

Figure 5 analyses the respondents' opinions on the evaluation and feedback of the project results. Accordingly, the participants were asked about the criteria for evaluating the project outputs. Accordingly, 60% (n=12) of the students reported that the project outputs were evaluated by an expert, while 40% (n=8) reported that they did not have any criteria. A total of 30% (n=6) of the teachers stated that the workflow in the work packages, 20% (n=64) had no such criteria, 30% stated that the order of achievement of the project objectives, and 20% stated that the project outputs should be evaluated by an external observer.

In Figure 6, the opinions of the participants about the results and presentation of the project were taken. In this context, the participants were asked about the most important gain they achieved after the project. Accordingly, 40% (n=8) of the students reported that they learned new information, 30% (n=6) reported that they gained experience, and 30% (n=6) reported that they did not gain any experience. Among the teachers, 30% (n=6) reported that they generated new project ideas, 20% (n=6) reported that they formed new project teams, 30% (n=6) reported that they gained experience, and 20% (n=4) reported that they gained nothing.

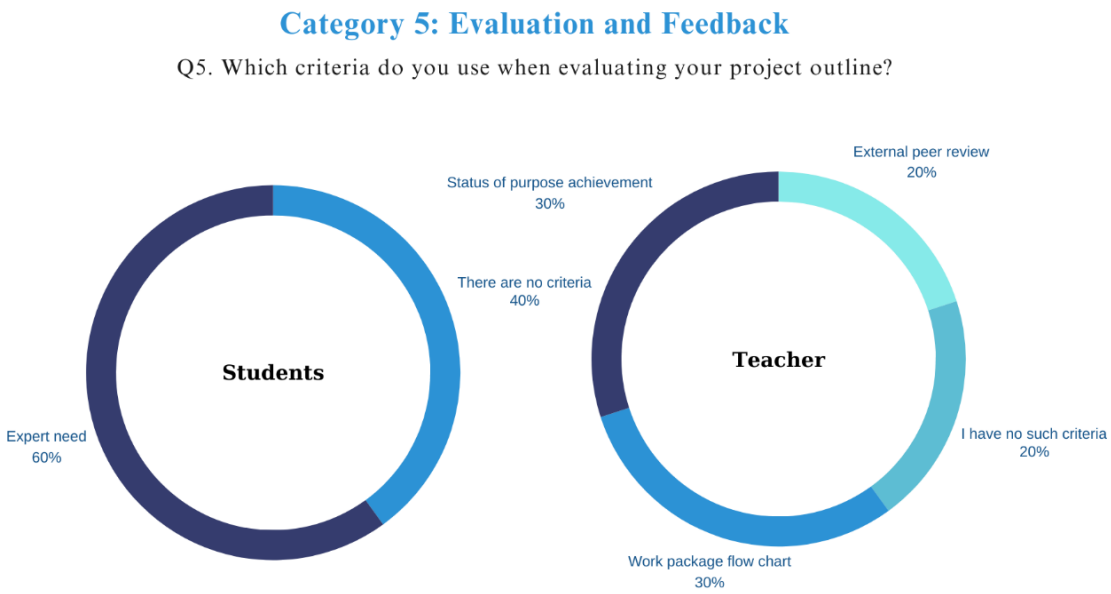

Figure 5. Evaluation and feedback

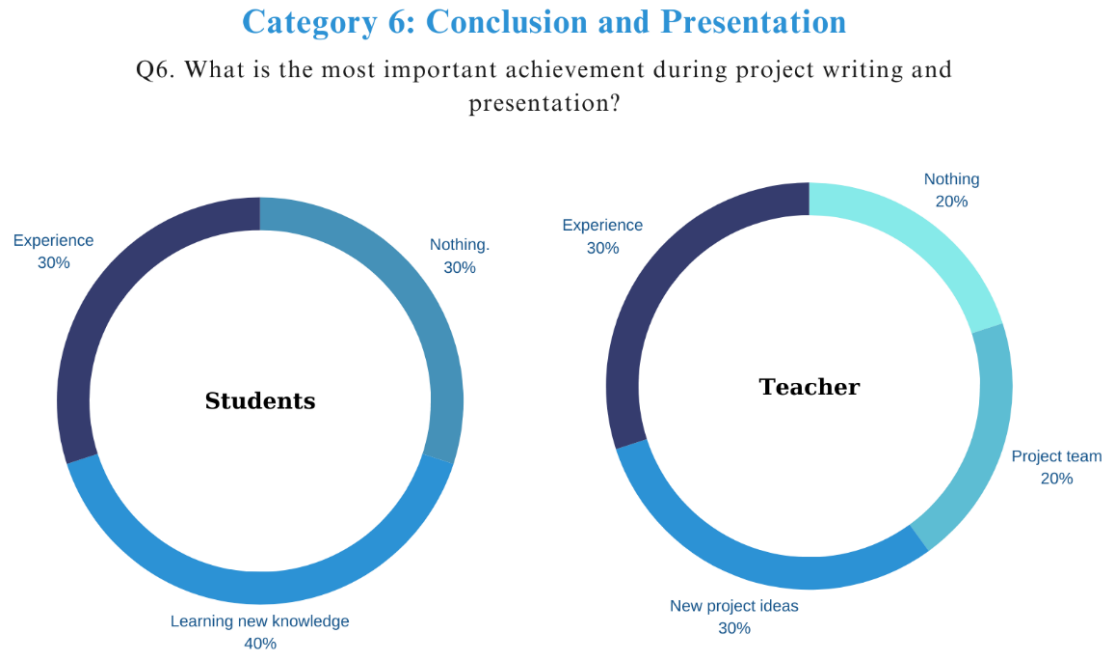

Figure 6. Conclusion and presentation

In the study, which was conducted to determine the problems experienced by university students and faculty members in project writing, it was determined that most of the students had no previous project experience, while the teachers had new experiences in project writing. In addition, it was determined that students experienced significant problems before, during, and after project writing. Teachers reported that they had significant problems in determining project topics and thought that the lack of knowledge in this context was an important problem. They also thought that the methods used in project writing and the number of researchers on the relevant project in the literature were insufficient. Teachers and students thought that they did not have any problems in establishing a project team and that the interest and knowledge levels of the team formed while writing the project were sufficient for writing and conducting the project. They also reported that being involved in a project had significant advantages in terms of experience and paved the way for focusing on other projects in the future.

The findings of the study provide important new insights into the challenges teachers and students face when creating projects and how technology is used in project management. A total 20% of teachers and 60% of students reported that they had never applied for a project or been a researcher in a project before. Although it seems to be a low value for teachers, this result is directly related to the results obtained in previous studies [24]. According to Rahmawati *et al.* [25], a significant number of university students lack project-based learning methods and related knowledge and skills. For this reason, the researchers argued that teachers and students should be subjected to comprehensive training on this subject [25]. The lack of experience in project writing is evidence of the need for long-term training programs that can provide educators and students with the knowledge and skills they need to participate effectively in project-related activities.

Furthermore, 30% of participants reported difficulty choosing project titles, which is consistent with research by Ika [26], which also emphasized the difficulties in the early phases of project planning. This problem implies that more assistance and materials ought to be given at the project's planning and brainstorming stages. In the current research by Santos and Carvalho [27], they mentioned 53 obstacles in project writing. Some of them are organizational problems, managerial problems, method-specific barriers, process problems, and team problems [27]. Previous research also mentioned the problems in determining the project title and thought that one of the main reasons for this was that the preparation process was not done well [28]. The aforementioned results emphasize the need for enhanced availability of educational materials and instruction centered around project writing approaches and literature review strategies.

Intriguingly, the study discovered that most teachers (70%) and students (60%) had little trouble building project teams. This is in contrast to Henkel's findings, which indicated that team creation was a significant difficulty in project-based learning contexts. The possible explanation for this mismatch is that the university where the study was done may have had effective team formation tactics in place due to its unique setting and support systems. The findings of studies done in the past and present indicate that one of the primary issues in many fields is project writing and assembling a project team. This is one of the key factors influencing the project planning and writing processes in particular [29].

In our research, it was observed that there were some problems in sharing the project results. These results are consistent with the results of the study conducted by Spoelstra *et al.* [30]. According to this study, the presentation and dissemination of project results in accordance with the project emphasizes that it is very important for other researchers. In this way, it is aimed to generate new project ideas and to prevent problems in project execution [30]. This also allows for the generation of a project-based learning environment and new foci of interest through the completion of a project.

This research has a number of limitations. Since it is qualitative research, this study, which was conducted on 24 teachers and 24 students, can be applied to a larger sample by using mixed-design research. Since a semi-structured interview form was used in the study, there may be subjective evaluations. This may affect the generalizability of the research results. This research was conducted only on universities located in certain provinces. For this reason, it is thought that there is a need for research including regions with different topographical characteristics.

4. CONCLUSION

This study emphasizes the problems experienced by teachers and students during project planning and application, as well as the importance of digital technologies that can be used in project applications. According to the findings of our research, teachers and students should be informed more about project writing. In this context, training on project writing can be organized for teachers and students. Within the scope of these trainings, necessary gains should be given about how and at what level they can benefit from digital technology. Universities should inform and disseminate students and teachers regularly within the scope of current project calls. At the same time, an environment where project ideas are discussed, suggestions, and criticisms can be created. In addition, legislators ought to create regulations that promote the fusion of digital technology with project-based learning. To get more thorough results, future studies should be carried out at several universities, with greater sample sizes, and using various techniques for gathering data. Furthermore, a more thorough analysis of the particular difficulties faced during the project writing process and the solutions devised to address these difficulties would add to the body of knowledge in this area. University students and teachers should be encouraged to write projects. More effective projects can be initiated by taking the results of our research into consideration.

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AUTHOR CONTRIBUTIONS STATEMENT

This journal uses the Contributor Roles Taxonomy (CRediT) to recognize individual author contributions, reduce authorship disputes, and facilitate collaboration.

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Dastan Kultanov					✓				✓	✓		✓		✓

C : **C**onceptualization
M : **M**ethodology
So : **So**ftware
Va : **Va**lidation
Fo : **Fo**rmal analysis
I : **I**nvestigation
R : **R**esources
D : **D**ata Curation
O : Writing - **O**riginal Draft
E : Writing - Review & **E**diting
Vi : **Vi**sualization
Su : **Su**pervision
P : **P**roject administration
Fu : **Fu**nding acquisition

CONFLICT OF INTEREST STATEMENT

There is no conflict of interest between the authors.

ETHICAL APPROVAL

For this research, the necessary ethics committee permission was granted on 16/02/2024 with the decision of SDU University, Faculty of Humanities Ethics Committee (Approval no: 2024/7). This research was conducted in accordance with the principles outlined in the Helsinki Declaration. In addition, participants were provided with the necessary information about the research and their voluntary consent was obtained.

DATA AVAILABILITY

Derived data supporting the findings of this study are available from the corresponding author [LI], on request.

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