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## Teamwork experiences of international students in a project-based learning at a Kazakhstani university

The first experience of the implementation of a project-based learning has indicated positive perspectives from international students and few challenges from local students. Due to most of the international students found the teamwork experience valuable, this study aims to explore teamwork experiences of international students during project-based learning. The study employed a survey design. It consists of three stages of survey, at the beginning, in the middle and at the end of the course. A total of 204 students participated in the course. In the first stage 163 responses were collected, in the second stage 113 responses, in the final 200 responses. Data was analyzed through the inductive approach within a qualitative analysis. The findings were discussed through the prism of the *Teamwork Indicator*. The study found that three out of four dimensions correlated with the framework. First, students reported an improvement in their social skills, enabling them to interact and express their ideas, aligning with the first dimension. Second, project management revealed that some students took on dominant roles. Third, work contribution was evident, with tasks being completed both individually and collaboratively. The fourth dimension, peer assessment, was under-researched, as students had limited experience with it.

*Keywords:* teamwork, international students, project-based learning, Kazakhstan.

### Introduction

The importance of research skills based on work-related or project-based learning have been highlighted at the Ministerial meeting, documented in a Paris communiqué. These skills were expected to resolve emerging obstacles in a society via the reciprocity of “education, research and innovation” [1, 3]. Joining the European Higher Education Area, implementing the parameters of the Bologna Process entailed significant changes in the education system of Kazakhstan.

The Kazakhstani education system, in accordance with the decisions made in the Paris communiqué, revised the education programs. This brought about the allocation of the status of research universities to some state universities. Extending academic freedom for universities brought new courses and modules. They promoted new approaches in teaching and learning that facilitated research skills, working in teams and developing critical and analytical thinking in students. However, employing new approaches among ethnically homogeneous groups members revealed contextual and cultural background challenges.

This study examines international students' experiences on newly launched project-based learning. It aims to explore international students' experience of teamwork during project-based learning. As a result, the research question of the study is how international students' cultural background maintains or inhibits teamwork.

*International Experiences of Teamwork Activities.* Adopting the innovative learning approaches originating from the parameters enacted by the Bologna Process have become widespread within the Kazakhstan's education system. One of these learning technologies is project-based learning, which was launched in 2019 in a Kazakhstani Medical University. Previous studies on innovative learning approaches conducted among international students at this university reflect their opinions and views about their experiences [2, 3, 4]. We found that these students have enjoyed the process, have gained knowledge, and have deemed such experiences to be exciting. This particular study aimed to explore another aspect of project-based learning, which is conducting tasks in teams.

Dividing students into teams and guiding them towards working collaboratively entail certain challenges. Research conducted among students in Russia, for example, has revealed four different attitudes that exist

among students working in groups such as dictators, procrastinators, complainers and freeloaders [5]. In fact, these titles provoke thoughts of unequal contribution to the tasks completed by a group, implying that there are group members that take responsibility over the work of others, other members that lack a sense of accountability, while some complain that nobody is working. These attitudes are not uncommon in the Kazakhstani context, as it remains influenced by its post-Soviet legacy and Soviet-era tendencies. Nevertheless, this state of affairs also depends on students' backgrounds as in this study we focus on international students from South Asia studying in Kazakhstan.

The benefits of working in teams have been discussed among scholars worldwide and is predominantly examined in the context of project-based learning. Students find working with their peers to be inspiring and supportive compared to traditional learning [6]. They believe that the skills gained from completing research projects can be applied beyond academia. [7]. In addition, their self-assessment and peer-assessment about contributing to projects with their peers indicated positive feelings [8]. In the medical field, students highlighted an improvement of their communication skills [9]. In addition, the fostering of teamwork has been noted while testing a framework for examining students' computational thinking through the balanced scorecard frame [10]. Furthermore, the advantages of project-based learning and its facilitation of teamwork among students have been pointed out in collaborative projects between countries [11, 12]. These studies among different countries were conducted online due to COVID-19 issues worldwide. Even though most of the studies refer to improvements generated by teamwork, a single approach to assess its success is as yet unforeseen. Nevertheless, to maintain the quality of groupwork Norwegian scholars have developed *the Teamwork Indicator* which helps to assess students' performance in group work through three vantage points, such as "social cooperation", "work commitment", and "management" [13]. However, scholars state drawbacks to students working in groups, such as students' lack of preparedness to self-express in teamwork [14]. Hence, they suggest guiding teamwork right from the beginning of the project [14].

Being able to work in a team is a significant skill for the 21st century. Despite the abovementioned studies conducted on project-based learning declaring an improvement of teamwork skills, it requires digging deeper into the phenomenon to understand the nature of its success. This study embodies students from a homogeneous cultural background cultivated in a traditional learning environment, yet who represent different social classes in their country. Hence, for this study, it was significant to explore how the South Asian background of the students impede or support teamwork.

*A Theoretical Framework.* The Teamwork Indicator, a framework developed by Holen and Sortland (2022), was selected to frame this study. This framework was based on the experience of master's students in the Norwegian University of Science and Technology. In that study, 20 items had been developed and identified by faculty members to assess the teamwork quality of their program Experts in Teamwork. Their study was designed for a longitudinal period. Therefore, metadata was accumulated from master's students in 2017, 2018, and 2019, and then analyzed by SPSS 20 and ANOVA. From the results, the following four major dimensions emerged from the students' responses: social cooperation, management, work contribution, and evaluation. In addition, the data was accumulated in two languages, English and Norwegian, so the findings excluded impact of a cultural background and the study language of students.

This frame is useful for this study in several aspects. Measuring teamwork through qualitative research is inherently vague and may introduce biases. However, when specific dimensions are identified through students' experiences, extrapolating results becomes more reliable. In this study, we engaged international students, which required us to consider their cultural diversity and learning backgrounds. Consequently, within the framework, cultural differences did not present any drawbacks. In addition, there were no misconceptions related to language of the study as this study was conducted only in English. Overall, in this study, the results generated from students' open-ended responses were analyzed through the four dimensions of the frame.

#### *Materials and methods*

This study comprises a survey that has been designed to provide the opinion of students on their performance during group work. [15]. The course was delivered between May, 2022 and August, 2022. The total number of students in the cohort was **204**. They were asked to complete a survey three times.

First, after completing three lectures, students were asked to share their expectations for the course. Second, midway through their project work, before the data collection process, they were asked to reflect on their experiences in handling assigned tasks within their groups, as well as their own creativity and that of their group. In this respect, it was necessary to help the students to comprehend their own roles and opinions

in terms of project-based learning. Finally, upon completing the course and presenting their projects, they were asked to list the key lessons they had learned. The students' responses were collected anonymously, confidentially, and voluntarily through Google Forms. Hence, in the first survey 163 responses were collected; in the second survey there were 113 responses; and the final survey produced 200 responses. In each survey there were incomplete responses which were excluded from the analysis.

The inductive approach within qualitative analysis was employed to analyze the data [16]. The open responses provided by the students were divided into themes and coded accordingly. Additionally, the survey responses were triangulated with observations of students' in-class activities and the document analysis of their projects submitted after their presentations.

Regarding ethical principles, students were given informed consent forms before proceeding to the survey. During the class they also developed an informed consent form for their own studies. Hence, they were familiar with research ethics and its importance for social studies. They were also informed that their responses will not affect their final grade.

The limitation of the study was the limited number of students from just one university and a single group of students with a homogeneous cultural background.

### Results and Discussion

The survey was conducted in three stages. Before starting the survey, students were required to read an informed consent form before proceeding to responding to the questions. The first survey consisted of three major questions and two demographic questions. It was completed by 163 students out of 204. Out of the 163 responses, 13 answers were excluded due to seven of them having been copy-pasted from the Internet and six which were identical responses. Hence, a total of 150 responses were included in the analysis. The gender female-male parity in the first survey was 46:104, all aged between 18 and 24. The answers were analyzed using the inductive approach (Table 1).

Table 1

Analysis of the Survey 1

	Questions	Responses	N	%
1	Expectations from the course	a) to gain new skills	64	42
		b) to learn about society, to do research	47	32
		c) brief responses (good, nothing, etc.)	39	26
			150	100
2	Skills that you (a student) possess to complete the course	a) social skills, dedication, hard work, learning from friends	91	61
		b) Patient care, analytical skills (indicating on-going development)	42	28
		c) "Personal management, perceptiveness, problem solving skills" (framed answers)	8	5
		d) "yes"	9	6
			150	100
3	Skills that you (a student) would like to gain within the frame of the course	a) brief responses (yes, nothing, no idea)	7	5
		b) social skills, being able to conduct research, survey, interview, gain confidence, etc.	143	95
			150	100

An analysis of the open responses points out that the second question confused some students. Due to this, 28 % (42) indicated skills they were expecting to gain rather than skills they already possessed. There were some responses 5 % (8) that ignited concerns regarding the originality of their points. It is assumed that responses of "yes" 6 % (9) might imply that they were confident about possessing the necessary skills to complete the course. Hence, based on students' responses it can be concluded that they listened carefully to

class lectures and aligned their expectations with the course's learning outcomes. Indeed, some students remained within their narrow vision of just being focused on medical subjects and becoming a good doctor.

The second survey was conducted after three days of practical classes to reveal how students interact with each other and deal with teamwork praxis. It consists of four open-ended questions. A total of 113 responses were collected, out of which four were excluded due to their being identical. Hence, 109 responses were analyzed. The gender ratio between female and male was 33:76 (Table 2).

Table 2

## Analysis of the Survey 2

	Questions	Responses	N	%
1	How do you deal with daily tasks?	a) daily: <i>"We think about it and discuss with group members (Male Student 64)"</i>	85	78
		b) "yes", "proper manner", "great"	19	17
		c) no responses	5	5
			109	100
2	What do you think about creativity?	a) <i>"I think about creativity that everyone should hope to learn something in their own way and try to create something (Male Student 19)"</i>	88	81
		b) "good", "nice", "interesting"	21	19
			109	100
3	How do you perceive new approaches in teaching?	a) "discussion with group members", "teacher-student interactions", "project-based learning", "distribution of tasks", <i>"Whatever we are doing regarding our topic it is so interesting we are enjoying while doing this that's all (Female Student 31)"</i>	92	84
		b) "yes", "nothing", "have no idea", "good"	17	16
			109	100
4	What are you following expectations?	a) <i>"Too high for learning and understanding people's interests and understanding new creative thinking and acquiring knowledge (Male Student 32)"</i>	83	76
		b) "nothing", "great", "yes",	26	24
			109	100

As it can be seen, these students completed their tasks daily; they contributed to their group work accordingly. However, it is worth mentioning here that out of 204, only 109 students responded. Therefore, the observation results brought out the presence of a group of students that had come to classes unprepared and who neglected their group work. The second question regarding creativity was asked to trigger deep thinking in students. By providing their responses, or at least, by searching for it, it was expected that writing on the importance of creativity during their project work would inspire them. Indeed, the answers they provided were very diverse in that they believe that creativity is "an art", that is "necessary", it "is invention", "thinking differently", it "develops intellect". Nevertheless, they were able to define the meaning of creativity on their own; however, the extent to which they could connect it to their studies remains unresolved. In response to the third question, which aimed to ascertain their perceptions of new teaching approaches, students drew from their experiences, referring to project-based learning and expressing empathy for the activities conducted during class. This implies that they do realize the novelty of the teaching approach and felt comfortable with it. However, observations of the class pointed out that they yet needed the facilitation of a teacher. According to the fourth question, most of them expressed their desire to learn and discover new things. There were both negative and positive opinions about the learning process. Although, there were more "nothing"

responses, one of the responses subsequently provided an elaboration of “nothing” by stating that everything had gone fine.

The third survey was undertaken after the project presentations and assessments were complete. The project defense seemed to inspire students to share the results of their work. Here everyone was expected to present at least two slides. Accordingly, it was necessary to be aware of what they were actually presenting. The responses regarding students’ emotional conditions show that they were excited, happy to finish the course, happy to present, and happy to receive feedback. Expectations from the course were met by 97,5 % of students. This means there remained 2,5 % of students who were unsatisfied. Their responses were quite contradictory: they felt happy; however, their expectations were not met (Table 3-4). These question needs to be explored deeper in future.

Table 3

Analysis of the Survey 3

	Questions	Responses	N	%
1	How do you feel now, after the completion of the course?	<i>As my personal review I like the classes and I want more classes in future (Student 5_Survey 3)</i> <i>The project is very important for me. It's very good thing for study and it will help in future. I feel very good. (Student 26_Survey 3)</i> <i>I really enjoyed the project work. And I'm so happy (Student 110_Survey 3)</i>	200	100
2	Have your expectations been met?	a) yes b) no	195 5	97,5 2,5
			200	

Table 4

Comparative Table of Positive and Negative Responses

How do you feel now, after the completion of the course?	Have your expectations been met?
Better (Student_11_Survey_3)	No
I feel that I learned new things that makes unity in group and discipline also (Student_56_Survey_3)	No
I feel very happy. I miss the class (Student_63_Survey_3)	No
I am quite happy after the completion of the project because this project taught me how to take a survey, importance of survey and most importantly how social life affects the life of students. (Student_185_Survey_3)	Not really
I am waiting to finish this (Student_197_Survey_3)	No

In summary, the results of the first survey yielded a limited amount of data; students expressed their expectations regarding obtaining a degree and the skills they anticipated acquiring based on what was discussed during the lecture. Consequently, they believed that they possessed the necessary skills, like confidence and dedication, to complete the assigned tasks.

The second survey gathered information regarding students’ perceptions of their own creativity as well as that of their groupmates. This was crucial to the learning process as it prompted students to consciously avoid plagiarism and to understand that project-based learning requires creating new work from scratch. An observation of the results of their project-work defense did not show any cases related to plagiarism of the

text within their research. Students did create their projects independently. However, they neglected to remain objective throughout the project and sometimes include their personal experiences.

The final set of survey questions contained many positive views on the part of the students who completed the course. Teamwork was important, yet individual contributions played a major role in the completion of tasks. It is important to highlight that these tasks were constructed in such a manner whereby everyone was expected to conduct an individual interview, and then to transcribe and analyze it before combining the results with those of others. It was significant to reflect upon each respondent's data as they appeared in charts. A similar pattern was employed in the survey of their peers.

**Social Cooperation.** According to Holen and Sortland (2022), The Teamwork Indicator findings of this study aligned with the first area on social cooperation. The social cooperation of students was mentioned in the survey responses. According to their expectations and final results, students confirmed that they had developed social skills, communication skills and interaction skills. In the first survey 95 % (143) stated that they had expected to gain social skills. This study contributes to the work of Castro et al., (2021) where medical students confirmed that they had gained social skills.

**Management.** Regarding management of the tasks 78 % (85) stated that they discussed this with their group members. Nonetheless, an observation of the results shows that some students took a leadership role while and others remained passive. This aligns with the study results obtained by Zav'yalova and Saginova (2017), which explain the different background learning experiences of students, and their level of language abilities which may sometimes inhibit their understanding of a task. It could also be explained by a fear of self-expressing during group work (Jaiswal et al., 2021). Nevertheless, survey results found that 84 % (92) perceived the class delivery method interesting and enjoyable. This contributes to the findings of Elsamanoudy et al. (2021) where students found peer learning supportive.

**Work Contribution.** The contribution of each student to a group work project was planned in advance, based on previous experiences [4]. Tasks were divided in such manner where some tasks needed to be completed within the group while some were to be completed individually. The observation results revealed copy-pasting responses. This implied that one student completed their part and shared it with the remaining students, who simply copied it. To understand their attitude, they were asked a question about the importance and the role of the task. If a student could explain it, their response was accepted without a reduction in grade. At this stage the extent to which it was important was regarding their comprehension of what they were doing and why they were doing so.

**Evaluation.** According to the students' impressions after the presentation 100 % (200) students felt satisfaction and joy with the completion of their project work. This aligned with the study of Bayer et al. (2022) where students highlighted that active learning is inspiring as compared to traditional learning. Due to students' being enrolled in the first year of a bachelor program, peer-evaluation was excluded. Moreover, their cultural identity impeded their provision of constructive feedback to each other. In the study where reflective practice was undertaken, the students' attitude demonstrated the belief that peer-evaluation ought to focus on their peers' positive features rather than indicating weakness and strengths [17]. Another reason could be that they are young and lack experience with peer-assessment. This dimension is expected to be practiced more frequently in future studies.

### *Conclusion*

To conclude, the response to the stated research question of how international students' cultural background maintain or inhibit teamwork accentuates following dimensions. The survey results revealed that **39 % (77)** of the students mentioned teamwork as a gained skill, and **33 % (66)** stated that they learned to interact with people during the data collection process. This implies that in other circumstances they would be less connected with each other. Moreover, according to our observations, two major obstacles were noted. First, students found it challenging to work in teams due to their coming to their groups with different capacities and capabilities. There were students with urban school backgrounds, whereas others were from rural schools, and this impacted their English language levels. Second, their place of birth in South Asia determined the way they divided themselves into groups and the manner in which they treated each other. In other words, a teamwork approach, to a certain extent, can impede independent learning and expressing oneself among first-year international students that represent homogenous ethnicities. Overall, three out of the four dimensions, that is social cooperation, management, and work contribution, were found in this study according to the Teamwork Indicator.

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### Қазақстан университеттеріндегі жобалық-бағдарланған оқытуда шетелдік студенттердің топтық жұмыс тәжірибесі

Жобалық-бағдарланған оқытуды енгізудің пилоттық тәжірибесі шетелдік студенттердің оң пікірлерін, сондай-ақ жергілікті студенттер тарапынан бірер мәселелерді анықтады. Алдыңғы зерттеулерге сәйкес, шетелдік студенттердің көпшілігі топтық жұмыс тәжірибесін маңызды деп тапты. Осыған байланысты, аталған зерттеу жобалық-бағдарланған оқыту кезінде шетел студенттерінің топтық жұмыс тәжірибесін зерттеуге бағытталды. Зерттеуде сауалнама әдісі қолданылды. Ол үш сауалнама

кезеңінен тұрады: оқу үрдісінің басында, ортасында және соңында. Пәнді оқуға барлығы 204 студент қатысты. Бірінші кезеңде 163 жауап, екінші кезеңде 113 жауап, соңында 200 жауап жиналды. Деректер сапалы талдаудың индуктивті тәсілі арқылы талданды. Нәтижелер топтық жұмыс индикаторы арқылы талқыланды. Зерттеу нәтижелері төрт өлшемнің үшеуі индикатор ұпайларымен сәйкестігін көрсетті. Бірінші индикаторға сәйкес, студенттер бірінші индикатор өлшеміндегідей өзара әрекеттесу және өз идеяларын жеткізу үшін өздерінің әлеуметтік дағдыларының жақсарғанына сүйенді. Екінші жобаны басқару индикаторы кейбір студенттердің басым екенін көрсетті. Үшінші индикатор — жұмысқа қосқан үлесі жеке және топта орындалған тапсырмаларда симбиоздық түрде көрініс тапты. Төртінші өлшем аз зерттелген, себебі оқу үрдісінде студенттердің бірін-бірі бағалау тәсілі қолданылмады.

*Кілт сөздер:* топтық жұмыс, шетел студенттері, жобалық оқыту, Қазақстан.

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## Опыт работы в команде иностранных студентов в проектно-ориентированном обучении в казахстанском университете

Пилотный опыт внедрения проектно-ориентированного обучения дал положительные отклики со стороны иностранных студентов. Однако получил незначительные проблемы от местных студентов. Согласно результатам предыдущего исследования большинство иностранных студентов посчитали опыт командной работы ценным. В связи с этим, данное исследование направлено на изучение опыта командной работы иностранных студентов во время проектно-ориентированного обучения. Для получения результатов авторами использовался метод опроса. Он проводился в три этапа: в начале, в середине и в конце курса. Всего в обучении приняли участие 204 студента. На первом этапе было собрано 163 ответа, на втором этапе — 113 ответов, а в конечном итоге — 200 ответов. Данные опроса были проанализированы с помощью индуктивного подхода в рамках качественного анализа. Результаты обсуждались через призму индикатора командной работы и показали, что три из четырех измерений коррелируют с показателями индикатора. Согласно первому индикатору, студенты ссылались на улучшение своих социальных навыков, которые помогли им взаимодействовать и эффективно передавать свои идеи, что соответствует первому измерению индикатора. Вторым индикатором — управление проектом — показал, что некоторые студенты проявляли доминирующее поведение. Третьим индикатором — вклад в работу — проявлялся в заданиях, которые выполнялись как индивидуально, так и в группе. Четвертое измерение осталось недостаточно исследовано, поскольку студенты реже сталкивались с необходимостью оценивать друг друга.

*Ключевые слова:* командная работа, иностранные студенты, проектное обучение, Казахстан.

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