STARTUP AS TOOL FOR DEVELOPING STUDENTS' PROJECT–RESEARCH BASED ACTIVITIES

A. Yessimbekova [1,*] iD *, S. Zhakipbekova [2]* iD *, I. Petkova [3]* iD

[1]Zhetysu University named after I. Zhansugurov, Republic of Kazakhstan, Taldykorgan
[2]Abai Kazakh National Pedagogical University, Republic of Kazakhstan, Almaty
[3]Sophia University "St. Kliment Orhidski", Bulgaria, Sophia
*e-mail: assylsoul@mail.ru

The paper considers the importance of project-research based activity as an effective approach of teaching and learning. The aim of the study is to define the reason of poor project-research based activities of students and suggest the way out from this situation. The article also shows the development process of students' project-research based activity by their participation in startup projects. The stages of startup projects realization have been analyzed. The diagnostic survey shows that the majority of students does not know the basis of project and research making. But many of them want to participate in startup projects competitions. Supporting motivation is the other discovered problem. As a result of the study the interface of mobile application has been represented for developing students' project and research-based activity. For creating it the Design-Thinking method was used. And the necessity of integrating startup projects into educational process has been founded.

Key words: *startup, project-research based activity, entrepreneurial skills, creative thinking, integration.*

Introduction

Project-research based activities are an integral part of the modern educational process. Its successful implementation in not only universities but primary schools as well depends on the level of teacher training. Future teachers must have knowledge, skills and abilities that will allow them to organize and direct students' project and research work. The purpose of this article is to determine the main components of training future teachers for project-research based activities and suggest ways to integrate them into educational programs of pedagogical universities.

Startup projects in educational settings serve as a pivotal mechanism for teaching students' essential entrepreneurial skills and fostering a culture of innovation. These projects are designed to bridge the gap between theoretical knowledge and practical application, enabling students to engage in real-world entrepreneurial activities. The integration of startup projects into educational curricula has been shown to enhance various competencies among students, including critical thinking, problem-solving, and teamwork, which are vital for their future careers. Modern education demands innovative approaches to students' training, which provide their successful adaptation in fast-paced world. One of the effective ways of solving this problem is students' taking part in startup projects. It integrates their research, project and entrepreneur skills. Startups help students to apply their theoretical knowledge in practice, develop teambuilding skills, create innovative, and demanded on market products.

Research indicates that entrepreneurial projects significantly impact students' career-choice readiness and metacognitive skills. For instance, Brausch-Böger highlights that engaging in entrepreneurial projects fosters a growth mindset and enhances students' ability to reflect on their learning processes, thereby preparing them for future career decisions [1]. Similarly, the Coworking Startup Project at Universidad Politécnica Salesiana emphasizes the importance of experiential learning through entrepreneurship, where students apply their academic knowledge in

practical settings, thus promoting the integration of skills necessary for successful entrepreneurial ventures [2]. Moreover, university startup accelerators have emerged as effective platforms for experiential learning, providing students with opportunities to engage directly with the startup ecosystem. Metcalf et al. note that these programs not only facilitate the launch of new ventures but also serve as vital educational tools that connect students with industry practices and entrepreneurial networks [3]. This experiential learning approach is further supported by the findings of Chanin et al., who advocate for collaborative teaching methods that leverage multidisciplinary teams to reduce startup failure rates [4].

The role of experiential learning in entrepreneurship education is underscored by various studies that emphasize the importance of hands-on experiences in developing both technical and soft skills. Cico discusses how capstone courses and industry-driven projects enable students to prototype their ideas, thereby enhancing their innovation capabilities [5]. Additionally, the concept of Challenge Based Startup Learning combines practical challenges with theoretical frameworks, allowing students to develop relevant solutions while gaining insights into the startup process.

Furthermore, the impact of entrepreneurship education extends beyond individual skill development; it also contributes to the broader economic landscape. Shenkoya argues that universities play a crucial role in fostering startup ecosystems that drive employment and economic growth [6]. This is echoed by Muscio et al., who highlight the significance of Ph.D. graduates engaging in startup activities, demonstrating how academic training can translate into entrepreneurial success [7]. So, as it has been mentioned above startups are innovative projects aimed at creating new knowledge and products. In educational environment startup become a platform for developing students' project thinking, market analysis, working with innovations, and adopting to true conditions of business.

Materials and methods

The survey has been taken for diagnosis of students' project-research based activities. Participants were students of educational program 6B01301 – «Pedagogy and methodology of primary education» (bachelor's degree):

2nd year course - 40 students;

3d year course – 33 students.

The survey had been conducted at Zhetysu state university named after I.Zhansugurov.

1. How often do you participate in project-research based activities as part of your academic program?

• a) always

• b) often

• c) rarely

• d) never

2. What are the most common problems you encounter during project-research based activities?

• a) don't know how to do a project

• b) don't know how to do research

• c) don't have time

• d) not interested

3. What project competitions have you heard of?

• a) University Startup Competition

• b) Regional Startup Competition

• c) Digital Jetysu "Pizza Pitch"

• d) Other _____

4. Have you ever taken part in a startup competition?

• a) yes, once

• b) yes, several times

• c) no, but I'd like to
• d) no, I'm not interested
5. What competitions have you participated in?
• a) University Startup Competition
• b) Regional Startup Competition
• c) Digital Jetysu "Pizza Pitch"
• d) Other _____
6. What motivated you to participate?
• a) the opportunity to win a cash prize
• b) developing the necessary skills and gaining experience
• c) personal desire to try something new
• d) Other _____
7. What functions of a mobile application designed for project-based research activities do you consider the most useful?
• a) educational information
• b) feedback
• c) submit an application for participation in the competition
• d) useful links
8. How likely are you to use a mobile application to solve project-based and research-based learning problems?
• a) will always use
• b) will often use
• c) will rarely use
• d) will not use
9. What else would you like to learn or learn through a mobile application?
• a) types of research
• b) how to write an article
• c) types of projects
• d) availability of tender documentation for projects
10. What additional function would you like to see in a mobile application to improve work on projects and research?_____

Also, Design-Thinking method is used for creating layout of mobile application aimed at teaching and learning project-research based activities. Above mentioned method let integrating innovative ideas into educational process. Besides, several universities use IGA for monitoring students' project-research based activities. Design-Thinking method helped students to use external solutions and develop solutions for solving the problem.

The main stages of it:

Empathy. The aim of this stage is to study the needs of students.

Define. Problems students face during project-research based activities.

Ideas. Students brainstorm ideas.

Prototype. Students create the model of mobile application.

Test. Trying the solutions students go back to some stages and make changes.

Main part

Project-research based activities of students are a powerful tool allowing not only widening the educational horizons but developing social and communicative competences. We tried to classify the principles of project-research based activities:

1. Active participation of students / Student-centered learning.

This fundamental principle allows to take into consideration the students' interests. It leads to active engagement. As noted by Mamuaja, project-based education encourages students to explore and apply concepts in real-life contexts, enhancing their engagement and motivation [8].

This principle aligns with the findings of Zhou, who emphasizes that real-life projects help students relate basic principles to practical problems, thereby improving their understanding and creativity [9].

2. Collaboration / Integration of knowledge.

Project work unites knowledge from various spheres, it gives general imagination of the problem. Project-research based activities promote collaboration among students, which is crucial for developing social skills and teamwork. Genç highlights that project-based learning enhances creativity and encourages research, as students work together to define problems and seek solutions [10]. This collaborative aspect is further supported by the work of Hu, who discusses how project-based learning fosters inquiry and cooperative learning, essential for developing transferable skills [11].

3. Real world relevance.

Project topics should be connected with real life; it increases the topicality and motivation of students, making learning more relevant and impactful. Pazmino's study on creating a magnetic safe box illustrates how project-based learning can enhance students' problem-solving skills by engaging them in practical applications of scientific concepts [12]. This principle is crucial for helping students understand the significance of their learning in broader contexts.

4. Reflection and assessment.

A critical component of project-research based activities is the emphasis on reflection and assessment. Students should be encouraged to reflect on their learning experiences and the processes they engaged in during their projects. Fernández-Cabezas discusses the importance of continuous assessment and feedback in project-based learning, which helps students evaluate their performance and that of their peers [13]. This reflective practice is essential for fostering a growth mindset and enhancing learning outcomes.

In summary, the principles of project-research based activities encompass student-centered learning, collaboration, integration of technology, real-world relevance, reflection, and an interdisciplinary approach. These principles collectively contribute to creating an engaging and effective learning environment that fosters critical thinking and creativity among students.
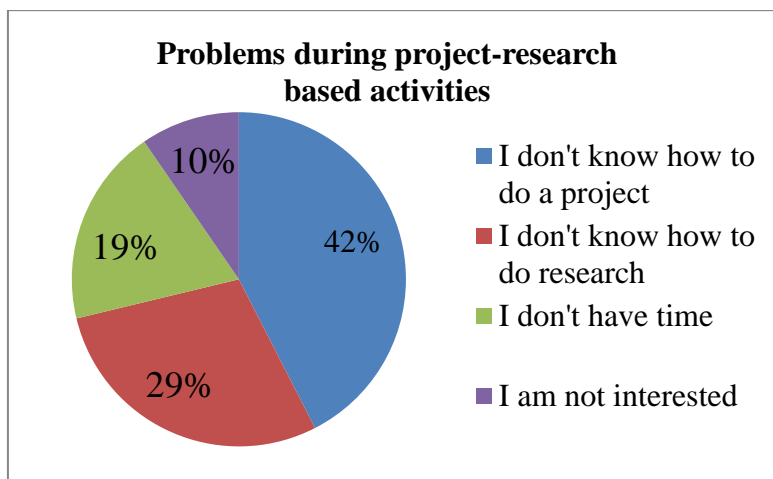
Results and discussion

According to the results of the survey it is clearly seen that only 11% of students are constantly involved in projects and research. 9% often, 12% rarely, and 78% never do that.
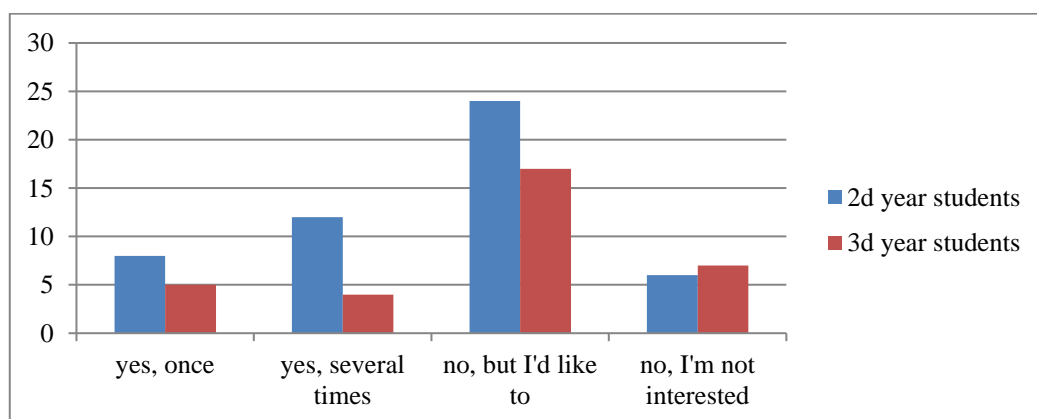
Figure 1 – Participation of students in startup competitions

Figure 1 shows that students have desire to participate in startup projects. They need support during the whole process. There are some students to work with, who do not have motivation.

Positive fact is students know the kinds and names of competitions conducted at university and in the city.

Problems during project-research based activities

42%
29%
19%
10%

- I don't know how to do a project
- I don't know how to do research
- I don't have time
- I am not interested

Figure 2 – Problems students encounter during project-research based activities

Figure 2 exhibits that students face with organization challenges of the activity. If 29% of students are away from research whereas 42% do not know the algorithm of project work. Nowadays, students at our university do not write diploma work, but there are Master's and PhD degrees which require thesis writing. Obviously, without published articles students cannot defense their theses.

Notwithstanding the cash prize for startup competition winners, the number of demotivated students predominates.

For this reason, we discovered that students need mobile application for learning how to do project and research. And suggest the interface of app ProResearchLab.

ProResearchLab is a place for obtaining necessary skills, increasing IGPA, inter-regional and national collaboration because of joined startup projects.

It consists of five main components:
Articles;
Projects;
Research;
Scientific activities;
Life hacks.

Pressing on each of these tabs leads to other tabs. For example, "Article" takes you to IMRAD structure of the article, and every part is explained to write the successful article. Types and definitions of scientific methods are done; you can go directly to the homepages of the scientific journals with the help of provided links to their websites.

"Scientific activities" means project competitions like, for instance, "Jas Galym", conferences, and regional scientific competitions for students. This tab provides with downloaded regulations of the competitions, and submission of applications.

Of course, every component has got assignments and feedback.

Conclusion

Project-research based activities of students are an important tool for developing students' key competencies, their motivation and interest in learning. This approach allows creating conditions for a deep understanding of the material, developing self-confidence and broadening children's horizons. Implementing projects helps students understand the importance of cooperation, learn to better organize their time and focus on results. In addition, project-research based activities contribute to the formation of such qualities as responsibility, determination and the ability to work with information. It is important to note that the success of project work largely depends on the teacher's willingness to be flexible and find an individual approach to each student. The use of modern technologies and tools, such as online resources, presentation programs and collaboration platforms, makes the learning process more exciting and interactive. The teacher,

supporting the initiative and creativity of children, forms a positive attitude towards learning that remains with them throughout their lives. In the future, project-research based research activities can become an integral part of the educational process, helping to prepare students for the challenges of the modern world. The success of this integration requires close cooperation between teachers, parents and educational institutions to ensure maximum benefit from the implementation of project-research based learning methods. Thus, project-research based research activities not only develop students' cognitive and personal qualities, but also strengthen their motivation for learning, opening the door to further achievements in education and life.

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СТАРТАП СТУДЕНТТЕРДІҢ ЖОБАЛАУ-ЗЕРТТЕУ ҚЫЗМЕТІН ДАМЫТУ ҚҰРАЛЫ РЕТІНДЕ

Есимбекова А., Жакипбекова С., Петкова И.

І. Жансүгіров атындағы Жетісу университеті, Қазақстан Республикасы, Талдықорған қ
Абай атындағы Қазақ ұлттық педагогикалық университеті, Қазақстан Республикасы, Алматы
София университеті «Ст. Климент Орхидски», Болгария, София
*e-mail: assylsoul@mail.ru

Мақалада оқыту мен оқудың тиімді тұрғысы ретінде жобалау-зерттеу қызметінің маңыздылығы қарастырылады. Зерттеудің мақсаты – студенттердің жобалау-зерттеу қызметінің әлсіздігін, себептерін анықтау және осы жағдайдан шығу жолдарын ұсыну. Мақалада, сонымен қатар, студенттердің стартап жобаларға қатысуы арқылы жобалау-зерттеу дамыту дамыту процесі көрсетілген. Стартап жобаларды жүзеге асыру кезеңдері талданды. Диагностикалық зерттеу студенттердің көпшілігінің жобалау-зерттеу қызметінің негіздерін білмейтінін көрсетті. Дегенмен, олардың көпшілігі стартап жобалар байқауларына қатысқысы келеді. Анықталған тағы бір мәселе – студенттерді үнемі мотивациялау. Зерттеу нәтижесінде студенттердің жобалау-зерттеу қызметін дамытуға арналған мобильді қосымшаның интерфейсі ұсынылған. Оны құру үшін «Дизайн-ойлау» әдісі қолданылды. Білім беру үдерісіне стартап жобаларды енгізу қажеттілігі дәлелденді.

Кілт сөздер: *стартап, жобалау және зерттеу қызметі, кәсіпкерлік дағдылар, шығармашылық ойлау, интеграция.*

СТАРТАП КАК ИНСТРУМЕНТ РАЗВИТИЯ ПРОЕКТНО-ИССЛЕДОВАТЕЛЬСКОЙ ДЕЯТЕЛЬНОСТИ СТУДЕНТОВ

Есимбекова А., Жакипбекова С., Петкова И.

Жетысуский университет им. И. Жанугурова, Республика Казахстан, г. Талдыкорган
Казахский национальный педагогический университет им. Абая, Республика Казахстан, г. Алматы
Софийский университет «Святой Климент Орхидский», Болгария, г. София
*e-mail: assylsoul@mail.ru

В статье рассматривается важность проектно-исследовательской деятельности как эффективного подхода к преподаванию и обучению. Целью исследования является определение причины слабой проектно-исследовательской деятельности студентов и предложение путей выхода из этой ситуации. В статье также показан процесс развития проектно-исследовательской деятельности студентов путем их участия в стартап-проектах. Проанализированы этапы реализации стартап-проектов. Диагностическое исследование показало, что большинство студентов не знают основ проектно-исследовательской деятельности. Однако многие из них хотят участвовать в конкурсах стартап-проектов. Другая обнаруженная проблема – поддержка мотивации. В результате исследования представлен интерфейс мобильного приложения для развития проектно-исследовательской деятельности студентов. Для его создания использован метод Design-Thinking. Обоснована необходимость интеграции стартап-проектов в образовательный процесс.

Ключевые слова: *стартап, проектно-исследовательская деятельность, предпринимательские навыки, творческое мышление, интеграция.*