# Using the Yammer cloud service to organize project-based learning methods

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## Abstract
The article reveals and interprets the key features of project-based learning based on cloud-based services: social activity; convenient communication in a team during the project implementation and at the resulting stage; open educational space; self-learning and self-improvement; use of interdisciplinary links to combine students of different years of study (1–4 degrees of the first (bachelor's) level and students of the second master's level) to joint research teams to study through research; purposeful motivation of cognitive and research activity of students within the discipline with the use of interdisciplinary connections; formation of digital literacy of students. The advantages and disadvantages of the Yammer cloud service are presented and a comparative analysis of this service with similar cloud services is performed. Examples of using Yammer in professional project activity are given. The stages of using project methods using the small group method are analyzed and detailed: initiation; planning; conducting/implementation; presentation; assessment/defense.

## Keywords
cloud service, Yammer, corporate social network, project teaching methods

## 1. Introduction

One of the important tasks of modern university education is to improve the quality of professional student's training. This encourages teachers to update the content, forms, and methods of

teaching to increase student motivation, ensuring the implementation of the principle of practice orientation. Project-based learning or project-based learning technologies are becoming increasingly popular among modern teaching methods [1, 2]. These are educational technologies aimed at acquiring knowledge in close connection with real-life practice, the formation of relevant skills and abilities through the systematic organization of problem-oriented learning. A characteristic feature of project-based learning is that problems must be meaningful to students, in fact, become their own problems. In addition, as noted by Barron and Darling-Hammond [3], students not only work in groups to solve real-life problems but also learn to feel responsible for the work done. Teachers play the role of coaches and facilitators. In today's conditions, characterized by the dynamic introduction of distance education, there is a significant question of organization and implementation of project-based learning methods. Therefore, the study of the possibilities of digital tools and services to address this issue is relevant.

## 2. The objective of research

In the works of Berezhna et al. [4], Glazunova et al. [5], Gryshchenko et al. [6], Horbatiuk et al. [7, 8], Iatsyshyn et al. [9], Pavlenko and Pavlenko [10], Podlasyi [11], Valko et al. [12], Vlasenko et al. [13], the advantages of using project method in the educational process, historical aspects of the formation of project-based teaching methods are highlighted. Thus, Dzyabenko et al. [14] notes that the project method is a way to achieve a didactic goal through the detailed elaboration of the problem (technology), which should end with a real practical result, designed in one way or another; a set of techniques, actions in a certain sequence to achieve the task - solving a problem that is personally significant for students and designed as a certain final product. The scientific developments of foreign scientists deserve attention. So, Blumenfeld et al. [15] found that the project method has the potential for learning, analyzed how it affects student motivation, identified difficulties that students and teachers may face in the process of working on projects. Tseng et al. [16] proved that combining project-based learning methods with STEM can increase effectiveness, generate meaningful learning, and influence student attitudes in future career pursuit. Kokotsaki et al. [17] proved that modern digital technology, group processes of high quality, teachers' ability to effectively scaffold students' learning and provide guidance and support, the balance between didactic instruction with in-depth inquiry methods and well-aligned assessment have been identified in the literature as facilitating factors in the implementation of PBL. In addition, it is worth noting results of researches in which theoretical and methodical bases of project teaching methods realization are revealed, among them Ayas and Zeniuk [18], Macias-Guarasa et al. [19], DeFillippi [20].

Theoretical and methodological principles of education informatization are presented in the works of Bykov [21], Fedorenko et al. [22], Holiver et al. [23], Pochtovyuk et al. [24], Smyrnova-Trybulska et al. [25], Velychko et al. [26]. Of particular interest in the issues of our article are studies on the use of social networking service in the educational process.

Thus, in the previous work of the authors of this article, the ways of organization of control and analysis of students of higher education institutions success by means of social services and social networks are considered; the advantages and disadvantages of using existing means of social services and social networks in conducting various types of control are analyzed;

examples of social services use of Instagram, Google Forms, Kahoot and English-language services Quizalize and Nearpod [27]. In works [28, 29, 30, 31, 32, 33] examples of the use of social networks for implementing the educational process, including social network Yammer [34] are given. The negative consequences of excessive use of social networks are given [35].

*The purpose of the article* is to reveal the possibilities of the cloud service Yammer for implementing project teaching methods in the process of professional training of students.

This purpose is specified in the following *tasks*:

- to find out the attitude of lecturers to the use of project-based teaching methods, in particular with the help of cloud services;
- to outline the specifics of the corporate social network Yammer as a cloud service;
- to give a comparative description of the Yammer social network on the example of the online service Keepteam and messengers;
- to reveal practical and methodical aspects of using the Yammer network for implementing project-based learning methods.

## 3. Research methodology

The following methods were used in the research process: analysis of scientific and pedagogical literature on the selection of features, stages of project teaching methods implementation in the educational process; analysis of online resources, methodological literature on generalizing the possibilities of social networks for the realization of project-based learning methods at different stages of implementation; study and generalization of pedagogical experience in the use of social networks in education; survey of university teachers in order to identify the problem area of the study. The survey of teachers of Borys Grinchenko Kyiv University was conducted during May 2021, the experimental project activity of students was carried out during March–June 2021.

## 4. Results and discussion

In May 2021, we conducted a survey of 25 experts — teachers of Borys Grinchenko Kyiv University, who have experience in using project-based teaching methods. The survey was conducted to find out the attitude of lecturers to the use of project-based teaching methods, in particular through cloud services. We did not aim to reconcile the respondents' opinions. It was more important to outline the main areas that make up the problem ares of research. Respondents were asked to answer the following questions:

1. Indicate the main advantages of project-based learning methods.
2. Do you have the necessary knowledge to implement project-based learning methods in distance education?
3. Do you have experience in implementing project-based learning methods using cloud services? If so, what problems do you face?

As a result, we have identified the main features of project-based learning:

- social activity that takes place within groups of students;
- the opportunity to use not only knowledge of academic disciplines, but also to learn to negotiate, make joint decisions, be responsible in accordance with the role in the training team, interpret the results of their activities;
- open educational space in which students move at their own pace;
- students' need for self-study and self-improvement;
- the possibility of attracting students of different courses; for junior students, it is better to use creative, game and practice-oriented types of projects; for senior students, it is more expedient to use research types of projects that are more complex and close to the real scientific research of the master;
- increasing the level of students' interest in a particular discipline (research area);
- improving students' skills to navigate in the information space;
- the need to get out of narrow specialization and integrate knowledge from different disciplines, etc.

In addition, our own experience of using project methods, using the method of small groups, made it possible to highlight their stages of implementation:

1) initiation (choice of topic and selection of ideas);
2) planning (modeling of realization algorithm of the future project);
3) conducting/implementation (practical implementation of the project plan: search and processing of materials on the selected topic, analysis, and synthesis of selected information, adaptation of the material to the project format, research, step-by-step control of tasks, formation of further goals and clarification of mechanisms);
4) presentation (demonstration of results);
5) evaluation/defense (control of tasks under the plan/protection of completed projects), etc.

As a result of conversations with experts, problematic issues were identified. Thus, the vast majority of teachers (65%) do not have the knowledge to implement project-based learning methods in distance education, in particular through social services (figure 1).
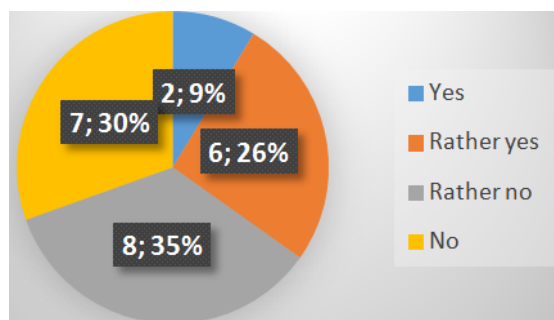


**Figure 1:** The results of a survey on implementing project-based learning methods using cloud services.

Some teachers (32%) note the effectiveness of implementing project teaching methods using cloud services (figure 2). Moreover, this is associated with the imperfection of the development
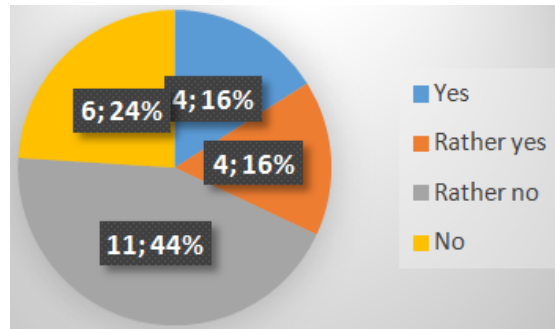
**Figure 2:** The results of a survey on implementing project-based learning methods using cloud services.

of methods for using digital tools and services for the implementation of distance learning in general and project-based learning methods in particular.

The disappointing results of the teacher survey motivate us to search for new digital tools for the implementation of project-based teaching methods. As such tools, consider social networks, given their popularity among participants in the educational process (students and teachers). As you know, there are currently quite a lot of social networks, but their methodological and didactic potential has not been sufficiently revealed. This is especially true of social networks within the corporate network. One such social network is Yammer. This is a private social network from Microsoft, which is integrated into the Microsoft Office 365 (corporate) software package. Yammer helps you stay in touch with the people you need, share information with workgroups, and organize projects. Only employees of a certain company can join, so communication in Yammer will be safe and visible only to people from a certain organization.

In the updated version of Yammer from 2016, all Microsoft Office 365 plans are integrated with Yammer Corporate, all Office 365 subscribers receive the appropriate licenses. In addition, Microsoft has introduced the Yammer Partner Enablement program, in which students (future specialists of the corporation) can share their experience in the field of promotion and realization of successful corporate social projects.

Why was the social network chosen to implement project-based learning methods?

Yammer can create teams to work together in teams and organizations, exchange files and collect feedback. As part of the service, you can configure the profile of the project team with photos, basic information about the group, and its members. It is clear that Yammer is not the only social service that can implement project-based learning methods. It can be compared, for example, with other cloud services and messengers (table 1).

Highlight Yammer features for the organization of project activity:

- *Joining a group.* Groups are an opportunity to work in a team or to stay up to date on a particular issue. The general group of the company is the group in which everyone can publish; each automatically becomes a member of this group. It is possible to join any public group, but you will need an invitation to join a private group.
- *Track user actions.* Following a user on the Yammer network means viewing his message on the news feed. Yammer allows you to search for people by name using the search box,

**Table 1**

Comparison Yammer capabilities and other services (✓ - function available, x - the function is absent, $ - the function is available only in the paid version).

| | Yammer | Slack | Viber | Telegram | Skype |
|---|---|---|---|---|---|
| Text messages | ✓ | ✓ | ✓ | ✓ | ✓ |
| Voice calls | x | x | ✓ | ✓ | ✓ |
| Video calls | x | x | ✓ | x | ✓ |
| Sending files | ✓ | ✓ | ✓ | ✓ | ✓ |
| Integration with third-party add-ons-file repositories, mail, other messengers, etc. | ✓ | ✓ (30 d. free) | x | x | x |
| Protection against "information garbage" | x | ✓ | x | x | x |
| Access to the full message archive | ✓ | ✓ | ✓ | ✓ | ✓ |
| Ability to save files | ✓ | ✓ | ✓ | ✓ | x |
| Minimum price per user per month | ≈ 5$ | ≈ 7$ | – | – | – |
| Supported platforms | Mac, Win, Linux, iOS, Android, Windows Phone, Web | Mac, Win, Unix, iOS, Android, Web | Mac, Win, Unix, iOS, Android, Web, Phone | Mac, Win, Unix, iOS, Android, Windows Phone, Web | Mac, Win, Unix, iOS, Android, Windows Phone, Web |

or to view the general information channel of the company, and to track the user whose message was interesting to you.

- *The answer is in the conversation.* The convenience of keeping the conversation makes the Yammer network especially useful. When an employee responds to a message, Yammer begins the chain. This simplifies the tracking of the entire conversation. To reply to a message, click the Reply button below the message, where the reply field will be displayed.
- *Notification of the message by pressing the "Like" button.* Yammer lets you say that you like the message.
- *Joining the conversation.* A web channel is a source of information. A web channel is a source of information.

Considering the selected features of Yammer, we indicate its capabilities for the implementation of project-based learning methods.

The work on the project consists of five stages. At the first stage, students are offered a topic. The teacher pays attention to the relevance of the chosen topic, awakens students' interest in the project, outlines the problem area of educational research, emphasizes significance, offers different perspectives on the topic. At this stage, the purpose and objectives of the study are formulated. Here are some examples of projects:

1. Overview of business models and types of analytics.

2. Familiarity with Google-tables in the implementation's context of information-analytical activities, including elements of descriptive and mathematical statistics.

3. Use of analytical activities in e-commerce using Google Analytics, Amplitude.

4. Databases and SQL — a declarative programming language for user interaction with databases, used to generate queries, update and manage relational databases, create a database schema and modify it, control system for access to the database.

5. Comprehensive business intelligence software from Microsoft Power BI.

6. Python review for data analysis.

7. Model on request On-Demand. We are one click away.

Let's highlight the Yammer functions for implementing the **first stage**: maintaining connections within the team. The Yammer network is a fast and convenient way to keep in touch with the team, discuss ideas, share news, communicate and share the experiences of other team members. Data exchange. The Yammer network is communication, file sharing, collaboration in teams on projects and specific topics. If necessary, partners from external educational institutions and organizations can be involved with the help of secure communication channels.

At the **second stage**, the organization of activity is carried out. The research project is implemented in groups created by the teacher. For each group the purpose, tasks are defined, the role of each participant of the research is outlined. Thus, one group investigates general scientific methods (analysis, synthesis, abstraction, generalization, etc.); another – methods of empirical research (survey, observation, experiment), the next – information and forecasting techniques (cognitive mapping, modeling, analysis of the decision-making process, expert evaluation, etc.), another group – methods of presenting information in information documents (extraction, paraphrasing, interpretation), etc. Use the Yammer function – a combination of leadership and command. Leaders and team members in terms of distance education are scattered territorially. It is important to know what the team members are doing and that the plans of the different people have been agreed upon.

In the **third stage**, the teacher announces certain problem situations. The groups decide whether the techniques they are considering can solve real professional problems. In the process of discussing the project, an action plan is developed, a bank of ideas and proposals is created. Systematization and generalization of work results is carried out. To implement the second and third stages, in addition to the above functions, Yammer uses the following: Connecting and engaging all colleagues. The Yammer network is a powerful and secure mobile application that takes collaboration to the next level by keeping team members anywhere, anytime.

At the **fourth stage** there is a presentation of research products. This stage is necessary for further analysis of the study, self-assessment, evaluation by experts (individual students or visiting graduate students, teachers). At the stage of presentation, students are required to concisely and logically coherently build a message, use clarity, adhere to the structure of the report. Let's select Yammer functions for the realization of the specified stage:

1. *Work in Office programs without any problems.* The Yammer network is a social network integrated with Office programs, which allows you to work productively with the help of the usual interface and file-sharing functions.

2. *Interaction with colleagues.* The Yammer network is an exchange and retrieval of information between management and team members; it is an encouragement and a reaction to the feedback; this is a recognition of merit and encouragement of diligence of team members.

3. *Dissemination and receipt of information.* The Yammer network is an announcement for the whole company, exchange of notes with additional details after important meetings, exchange of key news.

The research project is evaluated/defended at the **fifth stage** according to the following criteria: research nature of the work; reliability of collected facts; literacy and logic of presentation; presentation skills (speech culture, clarity, and illustration). They use the Yammer function – providing feedback because it is important to give team members the right to vote and show that you hear them. The Yammer network is a live chat with the entire company with questions and answers, a call of employees to answer your questions with questions or answers.

So, the outlined Yammer possibilities are a convincing argument for purposeful teaching of students in the context of the use of project teaching methods using the method of small groups. At the same time, the experience of implementing project teaching methods and conversations with students highlighted the problems of students' low awareness of the possibility of using cloud technologies. In order to solve the problem related to the weak knowledge of students about the implementation of project teaching methods with cloud technologies, we developed an e-learning course module in the LMS Moodle system on the topic "Creating educational content through corporate social service Yammer".

This module contains tasks related to the use of the project method aimed at the implementation of cooperative students' learning. Note that cooperative learning is not so much a form of learning as a special method of organizing educational activities in the group, which is based on positive interdependence between individuals in the process of learning, and the result of such educational activities is created by joint efforts final product [36, 37, 38].

A content module was created to study "Using Yamer in professional activities". The module takes into account the authors' research on the use of social services for teaching students [37] and the role of informatization in changing the competencies of high school teachers [38]. The created module is added to computer science disciplines with the help of LMS Moodle for students of the following specialties: "Applied Technologies: ICT in research and teaching", "Communicative Strategies of Oriental Language: Module ICT in Professional Activity" (discipline "Information and Analytical Studies: Modern Information Systems and Technologies"), "International Information" (discipline "International Information: ICT in International Information"), "English Philology" (discipline "Information Technology in Foreign Languages: Modern Information Technology in Foreign Languages"), etc.

In addition, the participants got acquainted with the module "Use of ICT in education" created by the scientific student group of Borys Grinchenko Kyiv University. Note also that the module "Creating educational content through corporate social service Yammer" was created for information technology disciplines taught to undergraduate and graduate students. "Module Creation of educational content by means of corporate social service Yammer" contains the following components: lectures (1. History of development and general characteristics of cloud service; 2. Online analogue of the wall for notes – Yammer service; 3. Advantages and disad-

vantages; 4. Using Yammer in professional activities) and presentation of the submitted topic; practical work (15 detailed tasks for mastering the skills of work in the service); video manual (step-by-step instructions for performing most tasks of practical work); glossary (dictionary of terms); test to test knowledge.

On figure 3 a screenshot element of the training course "Creation of educational content by means of corporate social service Yammer" in the LMS Moodle system.
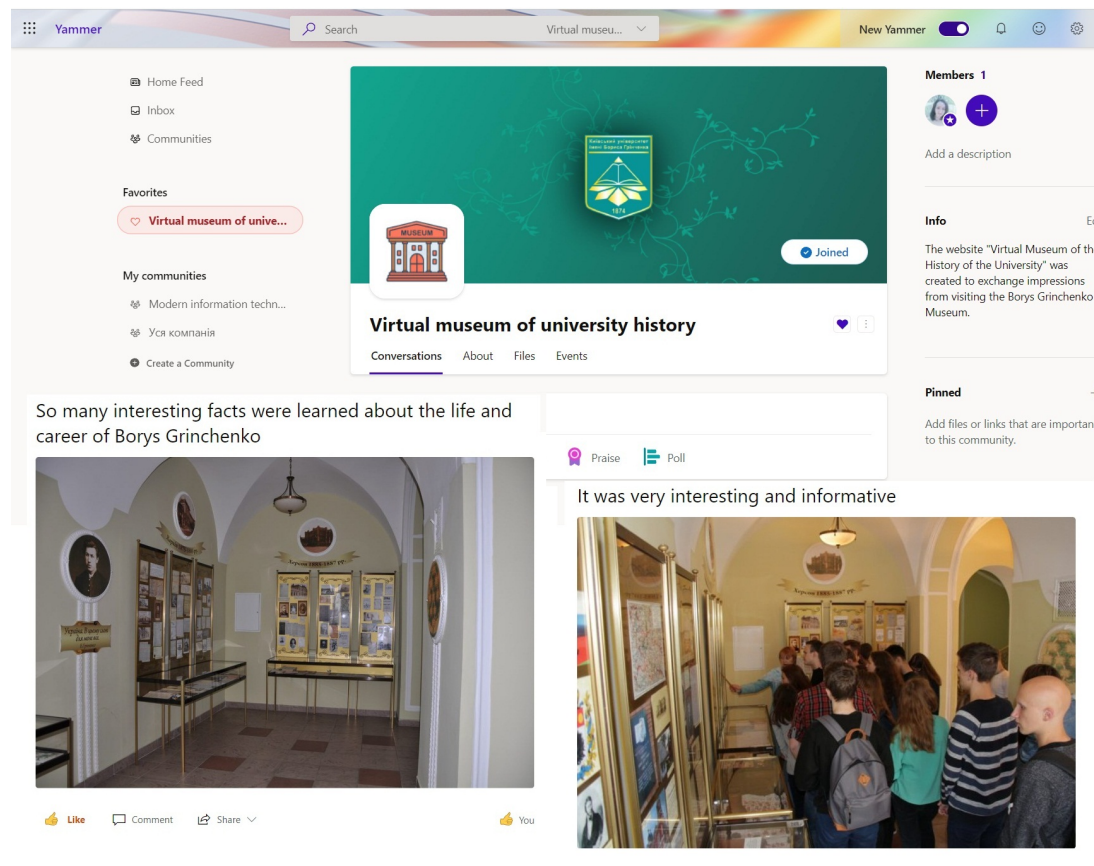


**Figure 3:** Creation of educational content by means of corporate social service Yammer.

As part of the scientific student group "The use of ICT in education" of Borys Grinchenko Kyiv University, we invited students to take part in the project's implementation method. During March 2021, 8 teams were formed, each with 4 students of the same level under academic achievements. In each group, there were two students majoring in "Computer Science", the other students – humanities. The teams were offered the implementation of an interdisciplinary project – the development of a website "Virtual Museum of University History". The project was implemented during March–June 2021 in a distance format. Four teams (K1–K4) used the Yammer network in the process of working on the project, other teams (K5–K8) communicated with the help of various digital resources. Projects were evaluated on a 10-point scale according to the criteria: the work is practical, contains a well-presented theoretical basis, is characterized

by a logical, consistent presentation of material with appropriate conclusions and sound proposals; has positive feedback from experts, students, teachers; In defending the work, students demonstrate in-depth knowledge of the topic, freely operate with research data, make sound suggestions, use clarity (tables, diagrams, graphs, etc. or handouts), easily answer questions. The evaluation was carried out based on expert assessments of participants in the educational process (through the use of cloud services Google Forms and Google Sheets) (figure 4).
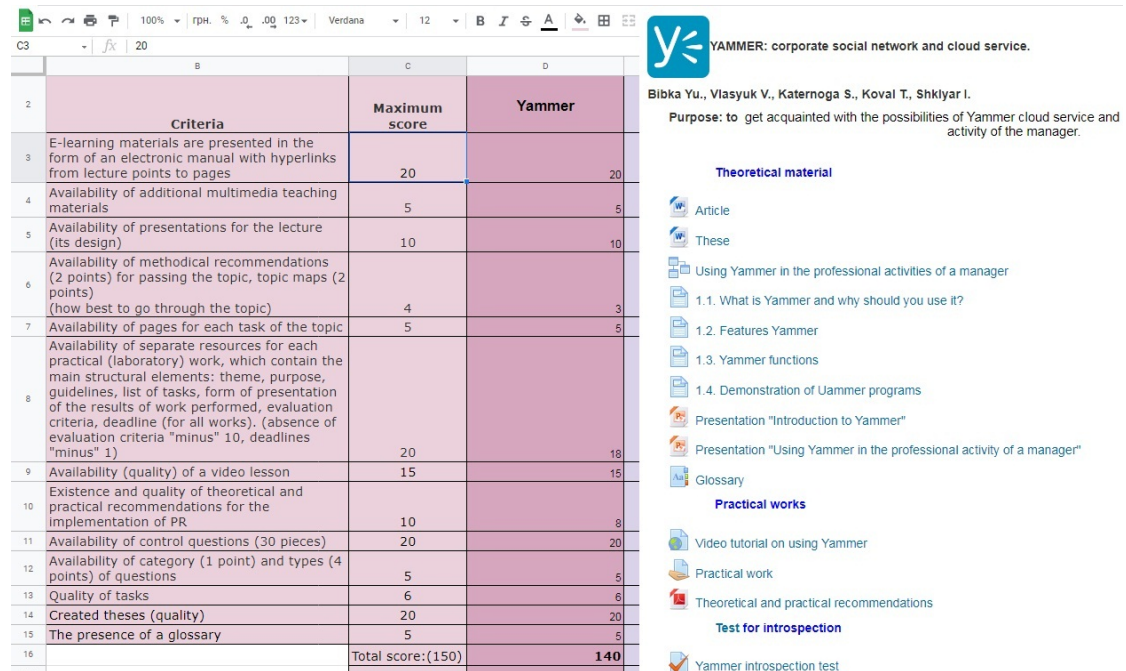


**Figure 4:** The results of a survey on implementing project-based learning methods using cloud services (table of criteria for evaluating completed projects, and an example of the implemented project).

The following results were obtained during the projects: K3 – 10 points, K2 – 10 points, K1 – 9 points, K8 – 9 points, K4 – 8 points, K6 – 6 points, K5 – 6 points, K7 – 4 points. This shows the effectiveness of the use of Yammer in the educational process, in particular, in implementing project-based learning methods.

## 5. Conclusions

By analyzing the experience of project activities among teachers of higher education, the main features of project-based learning on cloud-based services were identified: social activity; convenient communication in a team during the project implementation and at the resulting stage; open educational space; self-learning and self-improvement; use of interdisciplinary links to combine students of different years of study (1–4 degrees of the first (bachelor's) level and students of the second master's level) to joint research teams to study through research; purposeful motivation of cognitive and research activity of students within the discipline with the use of interdisciplinary connections; formation of digital literacy of students.

Over 10 years of experience of the scientific circle "ICT in the educational process" and 20 years of teaching experience of the co-authors of the study gives grounds to distinguish the following stages of using project methods using the method of small groups: initiation; planning; conducting/implementation; presentation; assessment/defense.

Conducted an analysis of the advantages and disadvantages of using well-known social services and messengers to ensure project activities. The key (within the work of small groups) functions of the Yammer cloud service have been identified and disclosed.

Prospects for further research include step-by-step detailing and methodological support for the use of cloud-based learning technologies for students majoring in the field of "human–human" using project methodology.

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