

# Project Activity With The Application Of Information And Communication Technologies

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#### Abstract

An article is considered the method of application of the information – communication technologies in the project activity of students, in particular, at lectures, practical studies and IWST (independent work of the student under the guidance of teacher). As a result, the project activity not only activates the student work, but also the teacher. In conclusion, process of system modernization of the education system in itself assumes overcoming the essential elements of old regime, the development of new ideas and, naturally, formation of other mechanisms and methods of the organization of project activity.

**Keywords**: Project, Activity, Paradigm, Information and Education.

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## Actividad De Proyecto Con La Aplicación De Tecnologías De La Información Y La Comunicación

#### Resumen

Un artículo se considera el método de aplicación de las tecnologías de la información y la comunicación en la actividad del proyecto de los estudiantes, en particular, en conferencias, estudios prácticos y IWST (trabajo independiente del estudiante bajo la guía del maestro). Como resultado, la actividad del proyecto no solo activa el trabajo del alumno, sino también el profesor. En conclusión, el proceso de modernización del sistema educativo en sí mismo supone superar los elementos esenciales del antiguo régimen, el desarrollo de nuevas ideas y, naturalmente, la formación de otros mecanismos y métodos de organización de la actividad del proyecto.

**Palabras clave:** Proyecto, Actividad, Paradigma, Información y Educación.

#### **1. INTRODUCTION**

Education is proclaimed in Kazakhstan as the priority direction in the sphere of social development. The success of the conducted state reforms in many respects depends on scales, level, quality of education and training. The state policy of Kazakhstan in education is fixed by the Laws on Education and on the National Professional Training Program. These normative documents determine the strategy and tactics of the reforming of all education system and its structures, the purposes and specific objectives of the training of the highly qualified specialists meeting the modern requirements of the labor market, the social order of society. A characteristic feature of the national model of training is inclusion in it of such components as the personality, society, continuous education, science, production. The state. personality is the main component of this model therefore the formation of the personality of the student has paramount importance. From the point of view of the new paradigm of education and also the pedagogical and psychological sciences, exactly personal qualities of specialist together with professionalism predetermine his the competitiveness. The educated person in modern society – is not only the person armed with knowledge, but able to get, acquire knowledge, does it purposefully in process of the emergence of his need at the solution of the problems facing him, able to apply the available knowledge in any situation. In this regard, there are problems, which are new for education; formation at students of the information and communicative competences. The innovative search of new means leads teachers to understanding that we need the active, group, playful, role, practical and oriented, problem, reflexive forms and methods of training. The significant role in the solution of these problems is played by the method of educational projects which gains the increasing popularity in recent years. The papers and reports, downloaded by students from the Internet, were gone to the past. Such types of works do not develop the creative potential of students and give a little, in educational sense. It is much more interesting to create

something themselves, so to speak, to solve the problem in the applied plan. The method of the educational project is one of personally oriented technologies, the way of the organization of the student independent activity, directed to the solution of the task of the educational project, integrating in it the problematic approach, group methods, reflexive, research, search and other methods. Training on the basis of projects is the model of training, different from the traditional studies, focused on the teacher, in favor of carefully planned interdisciplinary training, on the student, on perspective, and it is integrated with problems and experience of real life. Training on the basis of projects gives an opportunity of self-realization and effective training of all students. The training structure at the basis of projects transforms the training activity: it is not focused on the teacher speaking, but concentrates on what is done by the student.

### 2. DISCUSSION

It is no longer a secret that specialists of XXI century of information technologies must be fluent in computer skills and knowledge. For today it is not enough just to teach the students to click on the buttons, it is necessary to give a clear idea of where they will be able to apply the gained knowledge and to use the developed skills, only after it they will be demanded in modern labor market, only then they will have an opportunity to become successful. Following classics, we should remember that it is impossible to teach anybody, it is possible to learn something. So, it is necessary to organize training such a way that the student himself will be wanted to acquire this knowledge and skills. Therefore, it is necessary to interest him, then to create the situation in which on the basis of knowledge and skills acquired earlier, the student would need to get new knowledge and acquire skills, and then also to give him the chance visually to show the received results, and to the teacher – is to control the increase in knowledge and skills of the student (Balabanov, 2000; Ugwu et al., 2018).

It is possible to realize all aforesaid, using in the process of training the project activity, in which, following the time, it is obligatory to apply computer technologies. It is presented and proved the use of project activity at lectures, the practical studies and IWST, there are opened the methods of work of students and teachers on the project and the stages were shown. The technology of conducting the practical lesson is described with the use of IT-technologies. It is given a distribution of students' time on the studies at the realization of project activity with obtaining the final result and its application on the subsequent courses by students. The methods of work on projects on discipline information and communication technologies consists in ability to use competently information sources, to estimate its credibility, to correlate new information to knowledge gained earlier, the ability to organize correctly information processes and also to master working methods with text, tabular and graphic editing programs, to get acquainted with different presentation modes and hyperlinks (Jones, 1986; Ahmadi et al., 2014). The purposes and tasks

at work on projects on discipline information and communication technologies are:

• Control of knowledge, skills and abilities on the creation of the presentations in the PowerPoint program;

• To show the capability of use of the computer as an instrument of practical and educational activities of the person;

• To contribute to the development of the creative potential of students;

• To show capability of use and technology of work with new devices: scanner, projector, video camera, etc.

• To develop interest in knowledge, conscious and independent obtaining of new information;

• To develop communication skills, ability to conduct a discussion, to adduce arguments in favor of various versions, to prove the point of view, to compress the thoughts accurately;

• To be able to listen and respect opinion of the companion;

• To analyze information and to synthesize the new ideas.

For realization of goals and tasks according to the working program (in the beginning of the semester), we were formed four groups of students, that were determined and fixed for the students the themes for the development of creative projects:

1) The quantum computer.

2) Databases. Creation of optimum structure of the database.

3) Information security.

4) Safety of work on the Internet.

After determining the themes of the projects, there were distributed hours; the methods of implementation of the projects were discussed that is shown in Table No. 1.

Table No. 1.	The methods	of implement	tation of the	projects
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	Theme	Hours
Introductory lesson	Purpose. General requirements to work. Subject matter of works. Organization of work on the task. Project activityy.	1
Nomination of ideas	Nomination of ideas. Choice of the theme. Choice of the supervisor of theme and consultant.	2
Thinking about the idea	Ideal vision of the project. Study of the substantial plan and realization. Resources. Program and hardware for realization.	2
Collecting of the materials	Information search. Work with primary sources. Selection of information. Digitization of information.	2
Drawing up the project	Structuring project. Drawing up the project. The organization in the project of the interconnected blocks.	6
Preparation for defence	Form of carrying out of the defense. Materials which need to be prepared for defence. The main questions, asked at the	2

	defence. Rules of preparation of the report and speech.	
Preliminary defence	In the form of preliminary defence and interlocution (determination of completeness of statement of tasks, the chosen theme, understanding for the students).	2
Defence	Public presentation of the project. Answers on the questions.	2
Results of the test	Summing up the results of the test.	1
	IN TOTAL	20

Organizing the project activity of the students, we considered a number of circumstances, namely, it cannot be offered to the student the theme, as the project, as far as he has no knowledge and abilities for the implementation of it; together with it, he cannot find and acquire this knowledge and skills anywhere. In other words, the initial (even minimum) level of readiness was determined to work on the project. And of course, work cannot be considered as the project if it was very familiar, earlier carried out repeatedly, not demanding of the search of new solutions, and respectively, not giving the chance to acquire new knowledge and skills. The following methods were used for the solution of this task: - The heuristic conversation is the reciprocal form of education at which the teacher does not tell students of ready knowledge; he forces skillfully them to approach to the new concepts, conclusions and rules by means of the questions, stated on the basis of already available knowledge, observations, personal life experience. The essence of the heuristic conversation consists that the teacher plans search steps, divides the problem task on the sub-problems, and students carry out these steps. Each of steps, or the majority of them, demands manifestation of some characteristics of creative activity (Gvozdeva, 2013). The structure of the heuristic conversation is shown in its functions which are very various, as well as all methods of training, the heuristic conversation performs all-pedagogical functions: incentive, educational, educative, developing and control-correctional.

– Individual speech – is the format of personal work with groups of students, preparation of public statements in defense of the projects, development of ability of communication with the audience, development of the skills of the presentations – all this demands constant consultations with the teacher of discipline on which the project is carried out (Golkar et al, 2014).

- Creation of the problem situation – is happened by means of the solution of this or that problem situation at the lesson, it promotes to formation of motive of the student activity, activization of their cognitive activity. It is necessary to teach students to understand for what purpose they perform this or that task and what results they can be reached for achievement of the purpose. The principles of the importance of educational activity have the significance for the student. Exactly the problem situation at the lesson allows to the student to feel this importance. The teacher needs to teach students to observe, compare and draw conclusions. Such work contributes to bringing of students to ability to get knowledge independently, but not to receive them in the finished form. Sometimes it is difficult for the student to explain why the independent activity is necessary at the lesson, because the result of this activity is not always positive, and again the problem situation comes to the rescue, which will bring interest to the independent activities of students, and will be the constant activating factor (Kulyutkin, 2002).

- Brainstorming – this method serves for the operational solution of problems and it is based on stimulation of the creative activity of the students, taking part in it and offering the maximum quantity of various versions of the decision. After all, versions are sounded, there are chosen those which the most suitable for successful implementation in practice. Usually brainstorming consists of three obligatory stages, various on the organization and rules of carrying out, which include:

a) Statement of the problem - this stage is considered preliminary which means the accurate formulation of the problem, selection of participants and distribution of their roles (the leader, assistants, etc.). Distribution, in turn, depends on the specifics of the problem and form in which the storm will be conducted;

b) Generation of the ideas – it is the main stage, and the success of all process depends on it, when it is necessary to observe the following rules: -The maximum quantity of the ideas, without any restrictions.

-Even the fantastic, absurd and non-standard ideas are accepted.

-The ideas can and should be combined and improved.

-There should be no criticism or estimation of the proposed ideas.

c) Selection, systematization and assessment of the ideas – it is final, but not less important stage which for some reason often is overlooked. It is necessary to understand that through this stage it becomes possible to mark out really effective ideas and to bring the whole brainstorm to the common denominator. Contrary to the second stage, assessment and criticism are welcomed, and the success of carrying out this stage depends on coordination of work of participants and the general direction of their opinions, concerning the problem being solved and the proposed solutions.

- The Intellect-card method - is the practical application of the theory of radiant thinking. The word Radiant means the emitting light, beams (radiant). The central idea of this theory is best represented by the words of its author: Each bit of information, coming to the brain, each feeling, reminiscence or the thought – can be presented in the form of the central spherical object, from which there are dispersed tens, hundreds, thousands and millions of beams. Each beam represents the association, and each association, in turn, has an almost infinite set of connections with other associations. And this is what we call memory, i.e. the database or archive. As the result of the use of this multichannel system of processing and storage of information, the brain contains at any moment information cards, the complexities of

which would be envied by the best cartographers of all time, if they could see these cards. The purposes of creation of cards can be the most various: memorization of complex material, information transfer, clarification of the question for yourself.

There are certain rules for creation of the intellect-cards:

1. The significant object is settled down in the center the prototype (the basic concept of the theme, the section, paragraph; main idea; main problem). It should be highlighted in color, colorfully decorated; it is desirable to draw its image. It is recommended to use volume, convex letters.

2. The branches of associations are dispersed from the central concept (sub-theme, sub-idea) the number of which is directly proportional to memory. It is recommended to use no more than 7 branches (sub-themes, sub-ideas). If the quantity of branches be more than 7, there should be enlarged the groups of associations (groups of the sub-themes, sub-ideas). It is desirable for branches of associations to highlight with different colors. There are written one or two words on each branch (no more) and it is placed the graphic image which is associated with sub-idea (sub-theme).

3. Further, each branch of branches on sub-themes (sub-ideas) of the second level, also there are written one or two words on the branch of the second level and the graphic image of associations is placed.

4. Each branch of the  $1^{st}$  level with the corresponding branches of the  $2^{nd}$ ,  $3^{rd}$  levels is contained in the closed area (aureole) of the same color, as the branches.

5. Connections are established between concepts of different branches.

We marked out several stages of work performance in the process of implementation of the project tasks:

Preliminary – it was determined the course of work on the project.

Judgment – certain tasks according to the theme were set for each group, requirements and the work schedule on the project were determined.

Work on the project, which was implemented during the practical training and IWST according to calendar- thematic plan of discipline Information and communication technologies.

Defense Of the project – was conducted in the form of the conference, and management of the university, the teaching staff and students of 1, 2, 3 courses were invited. Each group had 5-7 minutes for defence and they, having divided in advance parts of the message among themselves, had to tell about the done work on all stages. After that attendees of the conference could address to the speakers.

The analysis of project work allows to sum up the results, to discuss together with students strong and weaknesses sides of each group: what was done, and what remained unrealized, which prevented the execution of plans, objective and subjective reasons, which must be taken into account in the following projects (Artyugina, 2009).

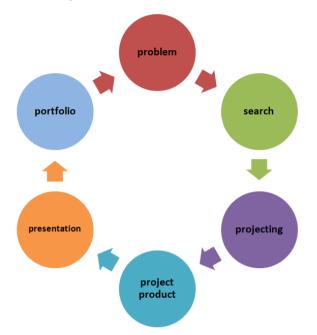


Figure 1 - Stages of the project work

The results of projects can be products, services, systems. The system of projects is built on the principle of complication, therefore the number of provisions is put in the basis of the training program:

- Gradual increase in volume of knowledge and skills (Monakhov, 2005; Asri & Aniqotun, 2019);

- Implementation of the projects in various areas, beginning from more acquaintances (the house, school, recreational facilities) and finishing more difficult (society, business, industry);

- Constant complication of requirements, imposed to the solution of problems (use of the integrated approach, taking into account a large number of the influencing factors);

- Students realize gradually own abilities and possibilities for the satisfaction of needs of the personality and society;

- The possibility to focus attention on local conditions as problems for projects get out generally of surrounding life.

At the summing up it is recommended to use criteria which allow to determine:

- Degree and quality of implementation of the plans, requirements, achievement of the results and indicators, planned for the moment of evaluating the project (programs);

- Relevance of the key provisions and assumptions on the project (program) accepted earlier, and which are key basic data for performance of the estimated stage of the project (program), in relation to the evaluating moment;

- Success of the process of the project implementation in making decision on passing of the control point and degree of readiness of the project (program) for transition to the following stage of the project (program) in case if such decision had to be made.

After carrying out the final lesson on demonstration of the projects, we carried out the system analysis of works which shown that during the implementation of projects the students received two results –product and personal.

Product result is that students received the real product which in the future will give them the chance to apply the received results in practical methods of the research. For example:

1) On the theme Quantum computer – it was developed the mini model of the quantum computer.

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2) On the theme Databases – it was developed the database for its application in the education system.

3) On the subject Information security - it was developed the program for the protection of the database.

4) On the theme Safety of work on the Internet – it was also developed the program for safe work of students on the Internet and during the work in this database.

Personal result consists in formation in the educational process of the system of the valuable relations of students to themselves, other participants of the educational process, to the educational process and its results. First of all, it belongs to the group projects, when the small collective works and there has appeared the joint product (result) of work in the process of the joint activity. It is possible to refer to such qualities:

1. Teamwork.

2. Ability to take responsibility for the choice, the decision, etc.

3. Ability to divide responsibility.

4. Ability to analyze results of the activity.

5. Ability to feel as the member of the team (to subordinate their temperament, character, time to the interests of common cause) (Maximov, 2013).

All these qualities were shown by the students during work with their projects.

The analysis of the final lesson on discipline Information and communication technologies with the name The present and the future in the system of higher education was allowed to draw the conclusion that use of the project activity stimulates cognitive motivation, develops mental and creative abilities, forms search, communicative, cognitive abilities of the students. Besides, project activity perfect skills of work with various sources of additional information, develops research abilities to analyze, systematize the obtained information. Project activity helps the student to overcome inertness in Vocational training, involves the students in common cause, and helps them to see the real result of the work.

The carried-out questioning among the students participating in this work was shown that:

1. 97% of respondents determined that project activity expanded the intellectual scope;

2. 94% of respondents learned to work with various sources of information, choosing material on the set theme;

3. 78% of respondents learned to form own judgment in the process of work;

4. 78% of respondents learned to analyze own actions and to present results of the work;

5. It was raised the self-assessment at 76% of respondents;

6. 75% of respondents mastered the technology of drawing up theses of reports and the presentations;

7. 52% of respondents gained the first experience of conducting the scientific discussion.

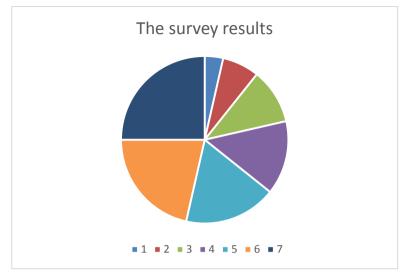


Figure 2 - Diagram of survey results

Thus, the project activity not only activates the student work, but also the teacher. At such role, the teacher should initiate at the same time training and educational process, he has to react adequately to the needs of students, to use information and communication technologies, to organize project activity of students, to build up partnerships. The teacher needs to master the technology, at which in practice, he can diagnose in due time the needs of student, to explain precisely the purposes and tasks, the result of activity to all subjects of training or educational process, to involve in activity all students, to teach them to express own opinion, the relation, without requiring unanimous support, to develop the student's self-assessment. Experience shows, if the project training methods in combination with information and communication technologies are actively used in the educational process, then it will be possible to achieve the high educational results, necessary for life in modern information society, namely (Svetlov, 2012):

 It increases the cognitive activity on the basis of development of the critical thinking and the ability to obtain information according to technologies the Internet;

- There have developed the communicative skills of work, both in group, and with the peers through the Internet;

 Formation of active creative and vital positions in all spheres of activity, including educational;

- Adoption of ethical standards and rules of joint activity, cross-cultural interaction, tolerance education.

The students form the general educational abilities, skills and generalized ways of activity as the result of active introduction of the project method on the lessons and at the outside regular hours. The students acquire knowledge more firmly, obtained in the process of the independent solution of the assigned tasks. Students gain experience of thoughtful work with the large volume of information from various sources, gain skills of educational cooperation and communication: learn to work in the collective, to plan work individually and in group, learn to evaluate situations and to make decisions. Project activity at the studies and outside regular hours contributes to the formation at students of spirituality and culture, initiative, independence, ability to successful socialization in society and active adaptation in labor market. The method of project activity is relevant in connection with the changes, happening in education; computers and multimedia became the integral part of educational space (Mostafaei et al, 2014).

Here it is formed the person, able to act not only on the sample, but also independently, obtaining necessary information from the most bigger number of sources, who is able to analyze it and to draw conclusions in the work process on the project with use of means of ICT (information and communication technologies). The method of projects is demanded by higher educational institutions as it demonstrated the high efficiency, motivation of training, reducing the workload, increase in the creative potential of the student. This experience can be used in mass practice as the form of individual, pair or group work of the students. The student is the center of creative activity who can show his activity. He has the remarkable opportunities to realize himself in project training, to feel success, to show others the competence.

#### **3. CONCLUSIONS**

Thus, we consider that this research will allow to solve problems of independent approach of each student to the received task and to realize it competently; to show interrelation of the considered issues from the point of view of the future profession, as the project activity gives the chance of implementation of the objectives and possibility of their application or in diploma projecting, or in the master thesis, or at writing the doctoral dissertation that will undoubtedly find reflection in practice. Therefore introduction in project training of the information and communication technologies can be referred to innovative approaches in education which open great opportunities for self-determination of the personality, for its self-realization in the modern world as the main task is training of the specialists with the universal and flexible skills, capable continuously to increase the educational level. Besides, it is necessary in educational institutions of Kazakhstan to create such educational programs which would provide for the use of the project activity on all trajectories of training, which would form the basic and special competences at students which became more attractive as for the most studying youth, and be in demand among employers. At the same time, the process of formation of the state educational order has to happen taking into account requirements of the employers and labor market where it is necessary to improve contents more than a half of state standards – there are necessary the innovative integrated educational programs taking into account project activity on the new directions of professional education (Peranginangin et al, 2019; Alkhateeb, 2019).

A very important question in the sphere of introduction of the scientific projects is: how effectively there are applied the funds for science in structures of export of the country, which were given generally from the republican budget. Despite the fact that over the past 12 years the state annually gives billions of tinges for the development of science, but the problem of the return of these funds and the return of the real sector of Kazakhstan's economy remains urgent. Therefore, in order to move forward, it is necessary to analyze

suggestions and achievements from the introduction of the scientific research. Therefore, in the sphere of research introduction, it is necessary to carry out open expertise of the projects which were executed both in the research organizations and at the enterprises where results of scientific searches were presented. At the same time, expertise has to be open and independent and the affiliated persons who are interested in formal positive results should not participate in it. The scientific and technical community has to know the names of winners of the republican competitions: projects, tenders, and the most important, the real results of competitive researches and their efficiency from introduction in the educational process, and then in production (Guzmán et al., 2018).

At the same time it is necessary to consider that process of system modernization of the education system in itself assumes overcoming the essential elements of the old regime, the development of new ideas and, naturally, the formation of other mechanisms and methods of the organization of project activity. As modern society cannot exist not only years, but also day without branched education system at all levels, it is necessary to weigh carefully more remote consequences, of the approved and realized educational projects. The transformation of the existing education system of Kazakhstan needs the differentiated approach when along with aspiration to the innovations there are remained the best traditions and achievements of the last stage of development. In the conclusion it is necessary to emphasize that studying of the program material by students independently through the organization of project activity solves the complex of educational and educative problems, and, certainly, helps to realize the main task of modern university education, and they are: formation and development of the qualities of the personality, necessary for society for inclusion in socially important activity, and also current tendencies of education development in the world and certain regions, the increased role of education in the development of public consciousness and society.

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