

# Development of student's initiative in future profession: the lecturer's option of interaction based training forms approach

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**Abstract.** In the article, the option of pedagogical interaction based training forms for student's initiative in future profession development is analyzed. The concepts of student's initiative, process of pedagogical interaction, pedagogical interaction based training forms are described. Sholom-Aleichem Priamursky State University, Moscow State University of Civil Engineering and South Ural State University served as an experimental base. The purpose of the experiment was to analyze effect of using pedagogical interaction based training forms for the student's initiative in future profession development. Two groups were selected for research: experimental (212 students) and control (219 students). Quantitative indicators of the dynamics testify the effectiveness of the experimental work: control group shows 16 percent progress while the experimental have 31 percent.

**Keywords.** Student's initiative in future profession, pedagogical interaction, pedagogical interaction based training forms, university informational-educational environment, social network community.

## 1 Introduction

The specific feature of contemporary higher education is considered to be a great number of networking tools to offer interaction opportunities. It is reflected in the development of Ubiquitous learning idea (U-learning) [1], mobile learning [2], e-learning system of interactive computer-based training settled through various educational settings [3], and promoting comprehensive partnership among all participants of the educational process to work together [4]. Using elements of learning environments [5], in addition to adaptation of current systems for a common use such as social networks, blogs, etc. are success criteria for teaching [6] at the moment. In this situation, a lecturer creates an educational space for students' training, consults them, and provides research direction [7].

Blended learning technologies are largely used in training health and care professionals [8], psychologists [9], and engineers [10]. Numerous studies have been carried out to strengthen efficiency of education using various educational tools: monitoring training

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systems by data mining technologies is conducted [11], methods for constructing the effective personal student learning environment are explored [12] and educator professional training [13].

Considering the situation, it is necessary to understand that these days an educator has to work in fairly strict accordance with modern information systems used at university, the curriculum and the number of classes. For that reason, a trainer has to look for all available means to improve the effectiveness of student learning. One of the ways to achieve that can be the choice, adaptation and provision of participatory training while using advanced learning tools as a part of all-pervading learning.

Moreover, the successful development of students' initiative, especially among freshman students, can make it much easier for the arrangement of such classes, removing various obstacles: communicative (fear of communication with a lecturer outside the class, in social networks), psychological (fear of failure), motivational [14]. The development of initiative in the professional field for senior students will help them to work more successfully, cooperate with colleagues and encourage a successful career in future.

The purpose of this article is to review the impact of a lecturer's choice of interactive learning methods on the development of student initiative in further career.

## 2 Methods

In the context of an evolving higher education, the review of studies indicates the focus on the description of a structure, types, systems, different options for the competencies of student professional training for mastering their competence in future career by the competence approach. Thus, there can be formed sets of information competence, social competence, and ethical and speech competence of students as a part of professional and general competence.

Besides, the research is being conducted on the relationship between academic subjects of educational programs and a part they take for the competencies that are being formed:

- the identification of correlation between academic subjects with the same set of competencies;
- the definition of specific subjects of one format with a different set of competences;
- the influence of a subject set on a single competence;
- the selection of the content of subjects according to competences mastered.

At the same time, the labor market significantly increases the demand for initiative and leading professionals who are able to work out practical problems using innovative approach. When applying for jobs, similar recommendations occur more often. Some scientists emphasize that at present employers start paying attention not only to professional skills of university graduates, but also to their personal qualities: social and communicative and general cultural competences, creative thinking, and the ability to respond quickly to challenges in the situation and find non-standard, innovative solutions.

Reviewed studies make it possible to identify interactive teaching methods that are recommended to a lecturer to use for developing students' leadership:

1. Conversation. Lecture in a conversational form involves a direct contact of a lecturer with the audience. While having a talk, the audience is constantly attracted to information, as an educator often turns to learners for feedback.

2. News conference. When arranging the news conference, an instructor gives the assignment to make up questions on the topic of the lecture. The lecturer plans a lecture according to students' questions, and comment on especially those matters that are the most interesting for students.

3. The project-based learning method means students' creating small information products, either individually or in small groups. Using this form, one can apply role plays. In other words, students are offered a part of a project manager, performers, an advertising

manager, etc. After completing a student's individual or group work, they usually organize the project protection, where it is also possible to use the key features of the interview.

4. Learning management system. When training the subject, an electronic course is used, which proceeds in parallel. As part of the e-course, students perform assignments; consult with educators through indirect pedagogical interaction. In addition, webinars for all-pervading learning can be organized in the system.

5. Case method. During these classes, students are presented a particular actual task, which needs to be solved. As a rule, the task requires them to search and review some available information on the issue related to the topic given.

6. Disputation. Using this method is relevant if there is some information that can be submitted implicitly and divides the participants into two or more opposite groups. It is necessary to provide learners with data sufficient to prove the opinion on this issue, the ability to gather scientific facts or quotes which they can refer to.

7. Debate. It is used in case there are several methods for solving the problem, and each of them has advantages and disadvantages. In this particular case, they arrange a group of experts. They must be convinced that they have chosen a proper method. Debate can be also used in project-based learning methods to decide who wins.

8. Edutainment methods. Using simulation programs allow students to get real data during the research, generate their own suppositions, and assess their validity. This form can be used in preparation for discussions to obtain visual data on the topic observed.

9. Public presentation of the project means developing presentation materials available for public discussion, as well as possible protection of the project. It allows students to analyze the information they study, use infographics, multimedia devices. As part of using games, one can define roles of opponents, defenders, etc. in advance.

10. Brainstorming. Using this form, students are encouraged to generate ideas in order to solve the problems offered, develop projects so that accomplish these goals. It is possible for students to generate issues by themselves. For this purpose, news conference is held first.

All interactive learning methods mentioned above can be applied both for direct and indirect pedagogical interaction. Interactive learning methods are used in indirect pedagogical interaction through interactive means of educational environment.

The authors are observing the methodology for developing students' leadership illustrated by the students' elective course "Development of web-sites for educational purposes". The peculiarity of this subject is a quite small number of classes. It forced the educator to organize a great amount of indirect interaction.

The methodology for developing students' initiative is achieved by means of organizing educational process in accordance with the curricula developed by lecturers. Lecturers' work in dealing with the e-course consists of the development of electronic versions of materials applied to distance educational technologies.

While developing the e-course in Moodle, a zero module for support was designed. Now it includes interacting means of connection with a lecturer, monitoring students' current academic achievements, and software links used in the course. In addition, recommendations on the design and attachment of electronic reports in the system were made in the module of the e-course. To arrange indirect interaction, the developers design a consultation forum where students can ask questions on topics they are interested in.

The main work out on pedagogical interaction is carried out in the Russian online social media and networking service VKontakte (meaning In Contact). There is also a shift to other components of information and educational setting of the university.

A rating system is used to record the students' academic achievements and to manage with counting and reporting information on points scored by students for the course they study. A link to a score page is also inserted into the zero module of the subject considered.

In the first module of the course “Basic Website Development” the lecture materials, lab works are presented. There are more detailed components of the course below.

Lecture (LC) #1. Web-sites for educational purposes. Since this lecture was the first (introductory) class of the course, it took place in the form of a conversation. During the lecture, the educator addressed to students’ experience in working with web-sites, including educational ones. Also, the lecturer focused on the concept of an educational website and observed types of educational sites. The participants of the lecture determined criteria of the educational site quality, and commented on the principle to navigate a site map. Materials on this lecture, as well as all lectures of the course, were downloaded in Moodle in a similar way.

The lecture is presented in the Moodle system by means of an appropriate course element and ends with questions and assignments for testing. The system assessed the correctness of questions, but the instructor checked the assignments.

LC#2. Installing Joomla CMS on the local server. This lecture was held in the format of news conference. Students prepared questions on the material installed in Moodle. The lecturer covered the questions that students asked more fully. Then the lecturer concluded to general statements, taking into account those notices that were not reported on by students for one reason or another. In this lecture, the concept of a local server was touched upon, its position in web-sites development, the local Open Server was concerned, the Joomla content management system (CMS) location on this server.

Lab#1. Joomla installation and configuration. This lab was held in a combined format. First, students worked in groups to find a common solution according to the elements that would be applied in their educational web-sites. Then they worked on their own mastering their skills of using the local Open Server, its installation and configuration for Joomla. They studied the basics of administering the Joomla content management system, the hierarchical structure of the objects of this system.

Lab#2. Designing a blog in Joomla. In this lab, students developed the content of the educational website: theoretical doctrines, images. They considered various settings of text and graphic information in the system, displaying the created materials on the site. All labs were taken from the authors’ book. During the lab, a disputation was arranged on designing materials using CMS Joomla. Students were willing to offer options of using various interactive elements when submitting the material.

The next module of the subject is devoted to designing the external interface of the website. Students were given lectures, labs and a seminar during this course.

LC #3. Site templates and design. In this lecture, learners examined menu types on websites, the designing standards of the web sites menu, and the algorithms for developing an order of links in the context menu. As a result of the lecture, students put the selected templates for the sites and worked together to refine them matching a particular project. Finally, they used brainstorming through the debriefing method taken from Workshop #1.

Workshop #1. Template analysis for Joomla. This assignment was done in a discussion workshop, transferred to Moodle. The seminar was conducted by means of the distance communication system “Forum”. “Debriefing” technique was used in this assignment. Students chose templates to design the educational website on their topics and assessed them according to selected criteria. They posted information on each study at a separate thread of the Forum where students evaluated each other’s work.

Workshop #2. Websites analysis in Joomla. In this seminar-disputation students chose websites on topics similar to their project and studied those websites according to the criteria they had developed independently. The proceedings were the same as in Workshop #1.

Lab #3. Template installation and configuration for Joomla. In this lab, students installed the template chosen for the site for educational purposes in Workshop #2 and

designed by Joomla. Then they set up that template, i.e. they changed a template logo, a color scheme of the design.

Lab #4. The website menu design. During this lab, students designed the left, top and right menu of the site, decided the hierarchy of menu objects, and submenus.

The next module of the subject “Website administration” is dedicated to the processes of adding some extra functions to the educational website, as well as indexing and publishing it. During the study, students studied lectures and labs.

LC #4. Website management. In this lecture, news conference was held, similar to Lecture #2. The lecture observed the principles of defining user roles, distribution of rights for user groups in Joomla CMS.

Lab #5. Installation of additional modules on the website. While working, students mastered the algorithms for installing additional modules for the educational website. Students installed and configured the CAPTCHA service, RSS news feed, text processing modules on the site, inserting tools for playing sound and video on the site. Before doing the lab, the work in a social network was arranged.

Lab #6. Working with users on the website. While working using a case method, students organized registration for users on the site, defined rights for standard roles of user groups, and started new user groups.

Lab #7. A website hosting. During that work, students were indexing their educational website, finding hosting for the site, and registering it in search systems.

As a result of performing all labs, a student received a fully functional educational website, which he/she represented at the seminar-conference. Students prepared reports and presentations of their website, discussed guests and peers’ comments at the conference.

During the training, students were given an opportunity to write papers on the proposed topics. The students selected the topics from the “The headlines of the course articles for writing” designed in Moodle.

A follow-up phase of the subject was also conducted in Moodle. The control test was being open for doing on the date of the credit test. So the students had an access to it for two hours, and each student was given one attempt.

The main recommendations for a lecturer on choosing interactive learning methods for a particular academic subject are the following:

1. The effectiveness of using interactive educational methods directly depends on the quantity of participants and membership in the educational process. Using verbal activities while working with two or more student groups has more difficulties in socialization. In addition, there cannot be many participants for forms such as debate, brainstorming, etc. The optimal number is 6-8 learners. It will ensure the activity of all students when using this form. If a group of students is more numerous, it is possible to divide it according to different topics within a distance pedagogical interaction, for example, to make up different topics in a social network service.

2. It is necessary to make each student’s maximum use, give everyone an opportunity to speak out, and moderate communication. If some students are too active, it is necessary to stop them by means of prearranged regulations of the class. In addition, it is necessary to prepare students for classes using short warm-up activities. Such tasks (time spent) must be taken into account when drawing up the format of the class.

3. The software and hardware that are going to be used must be prepared for the class. To do this, one should gather all the students first, connect the required equipment, enable and authorize in required software systems.

4. A clear schedule of the class is established while giving out the assignments. In such interactive training methods as news conference, presentation of the project, etc., one should inform students about the rules of the class, distribution of roles and functions of participants on the spot. All the materials referring to the class are recommended to download in the e-course of the subject and a social network service.

5. There is no need to form voluntary groups in case of group work is supposed. It is better to use random number generators and divide students into equal groups.

### 3 Results and discussion

The main task of studying students' information competence was to observe and record the dynamics of indicators. The object of the research is the process of developing the student information competence, and the subject is the dynamics of changing the level of the student information competence which helps to overcome obstacles in the usage of information technologies.

The surveys to assess the effectiveness of student initiative development by interactive learning methods used by a lecturer were conducted in the academic year 2107/18 at three universities located in different Russian regions. They are Sholom-Aleichem Priamursky State University, Moscow State University of Civil Engineering and South Ural State University. There were 212 students in a pilot (experimental) group and 219 ones in a control group who participated in the project.

The purpose of the studies is to assess the level of initiative development in a student future career before training. It also includes monitoring changes during the training course, and giving a check test at the end of training. These findings are presented as the ranking in Table 1.

**Table 1.** Levels of students' initiative

Students' Initiative Level	Level Characteristics
Low	While working, a student reproduces and applies algorithms of a learned basis for work accomplished on his/her own
Middle	While working, a student produces new information subjectively when synthesizing a known basis by himself/herself
High	While working in each new situation or task, a student sets up new rational ways, i.e. fairly new information

Two groups of students were selected for the study. The first control group was trained according to the system of blended learning. LMS Moodle was employed as the site which contained materials and assignments to carry out. The most part of classes was conducted in the classroom. The second experimental group was trained using a special system of interactive learning methods provided by an instructor.

Test measurements showed quantitative changes in the levels of students' initiative in the control and experimental groups.

**Table 2.** Students' initiative levels dynamics in control group

Groups	Number of students	Students' initiative levels					
		Low		Middle		High	
		No.	%	No.	%	No.	%
Before	219	154	70.3	53	24.2	12	5.5
After	219	102	46.6	70	32.0	47	21.4

**Table 3.** Students' initiative levels dynamics in experimental group

Groups	Number of students	Students' initiative levels					
		Low		Middle		High	
		No.	%	No.	%	No.	%
Before	212	136	64.2	41	28.8	15	7.0

After	212	88	41.5	63	20.3	81	38.2
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The data analysis culled from those studies proved that it is more effective to use a system of prepared interactive training methods in a subject for students' initiative development in their future career than a standard methodology of blended learning. The fulfillment confirms that pedagogical interaction regarding a lecturer's choice of interactive training methods for students' initiative development contributes to identify and solve problems, and masters their professional skills development.

The results of the experimental evaluation demonstrate students' growing initiative. The number of students with high-level initiative has increased by 16% in the control group, while that in the experimental group has risen by 31%. This is the evidence that the methodology used encourages students moving to the next high level of initiative, while the standard methodology does not provide this development, but lets students achieve only the middle one.

## 4 Conclusion

Positive changes, in their development over time, testify to the effectiveness of the experiment, that is, using the system of prepared interactive training methods in an academic subject is efficient for students' initiative development in their future career. At the same time, using pedagogical interaction ensures goal-centered, regular, systematic and effective educational process. The data analysis culled from those studies showed that the authors have achieved the scientifically sound and tested goal.

Further research can be related to continuing enhancement of this methodology, as well as its adaptation to develop other students' competences.

## Acknowledgements

The study was conducted with the financial support of the Ministry of Education and Science of the Russian Federation, grant no. 2.8720.2017/8.9.

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