

# FORMATION OF TEAM WORKING SKILLS BY APPLYING DISTANCE LEARNING METHODS

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Keywords: Distance learning, Virtual teamwork, Test, Evaluation criteria.

Abstract: In this article the problematic of formation of teams, working in the distance learning (DL) environment is analysed. It seeks to reveal the specific functions of virtual teamwork, effectiveness of tools and technologies for communication, and collaboration levels. This research should promote the teamwork skills for students, and to elaborate highlights, how the DL courses have to be prepared, what type of tasks and course materials may be used, what is optimal size of the team and the demanded time frame. The evaluation systems, criteria, tests and necessity for self-control tasks are discussed. The article reveals benefits of teamwork for utilization of distance learning materials. The article is based on the case of preparing the DL modules within the framework of the project, supported by structural funds of European Union „The integral development of Lithuanian distance learning system“.

## 1 INTRODUCTION

Distance learning courses and their perspectives of substituting traditional learning practice recently became popular and encouraged by education institutions. It is expected that DL could help in managing the growing number of students, overcome descending studies financing, reduce immoderate load of traditional work for teachers and assist in students' willingness to combine studies and work. In their attempts to define the concept of DL studies (Horton, 2003, Perraton, 2000), emphasise three different aspects of this learning mode: distance, time and form. *Distance* would mean the opportunity to study via individual access to remote knowledge terminal only having internet connection. *Time* factor gives freedom to study at the convenient time, planned by student, and the *form* means the opportunity to use the most advanced video, multimedia and internet facilities.

Many advocates for DL (Talbot, 2003) indicate and other advantages, such as opportunity for simultaneous studies for a big amount of people, personalization of studying programs, easy ways to adjust the speed of studying with the needs of each student, and therefore making the learning process cheaper, flexible and easier managed by instructors and students. In DL different teaching methods are combined in order to assist students to choose the

most acceptable study way (Wright, 2003). In most cases these are individual, personal studies, but the future career requires ability to utilize knowledge in corporate work, therefore learning in groups and development of teamwork skills is an important aspect while mastering the course material.

This article is prepared based on the experience derived from the running DL courses “Statistical analysis of the business environment” and “Modern information technologies in public administration”, developed within the project „The integral development of Lithuanian distance learning system“, supported according to framework of European Union structural funds.

In the following chapters we substantiate the necessity to form the teamwork skills in DL, discuss the tools of communication within virtual learning teams, present the summary of survey research aimed to discuss factors, affecting accomplishing study tasks in teamwork, and evaluation of students.

## 2 COMMUNICATION OF VIRTUAL TEAMS

Virtual team is the group of specialists, organized by the qualification, needed for completion of provided task, independent of their geographical location and

securing their communication by communicative nets in virtual space (Wainfan, 2005). The main differences of traditional and virtual working teams are presented in Table 1. We apply this study mode in distance learning environment, where teamwork is understood as accomplishment of study task in communication of virtual team members.

Table 1: Communication of traditional and virtual teams.

<i>Traditional team</i>	<i>Virtual team</i>
Communicates visibly	Virtual, video and audio communication
Fixed time and space for communication	Unlimited participation by space and time
Based on the cooperation of people	Based on the application of internet technologies
Culture of cooperation, motivation is based on the communication of people	Communication code, activity evaluation is based on virtual means
Obvious relationship between privacy and corporate communication	The sense of participation is secured by means of communication

Virtual teams provide flexibility of communication in sense of six levels: time, spread, consistency, environment, approach and content (Table 2). Hence it is common to allocate tools and technologies of virtual teams also to six levels (Schoop, 2005,2006).

During learning process the students have to accomplish big variety of tasks. In team learning the communication component is added which is made even more specific as it is realized in the virtual space. The selection of tools for applying in distance learning depend on the learning environment and choice of course teacher, however, the more technologies we use in our course, the stronger teamwork skills will be developed.

The method for forming virtual teams is not usually restricted by the learning environment, and mostly depends on the moderator of the course. The teams can be formed spontaneously or by using established rules regarding size, competences, and roles (Schoop et al 2005, 2006). The activities within the team can be supported by communication tools, implemented in such learning environments as Blackboard, WebCT, Moodle, CDK. They are quite widespread in most enterprises therefore add to development of students ability to effectively work in teams. The main communication tools include asynchronous tools (e-mail, bulletin boards), synchronic tools (chat, forums, meeting tools), graphic environments (whiteboard), sharing feature (sharing screen, files and documents, synchronic work with files), time management tools (task calendars, lists, evaluation of work progress).

Table 2: Tools and technologies of virtual teams.

<b>Time</b>	Synchronic (conference) and asynchronous (message) communication forum with constant approach
<b>Spread</b>	Group and individual tools of communication, virtual communication, real communication, videoconferences.
<b>Consistency</b>	Sources of information are chosen and differently composed, work consistency and coordination is discussed, ideas are freely formulated, knowledge from various spheres are integrated, unlimited participation in discussions according to the role, competence or by the initiative of the member of the team.
<b>Environment</b>	Discussion forum, document storage, e-mail, graphic means, tools for creating the content of internet pages (e.g. content management system), the tool of providing organic information (e.g. wiki)
<b>Approach</b>	Constant approach to forum, unlimited storage of provided information in it, storage of discussion material
<b>Content</b>	Any digital form: text, graphic, video, link, emotion and other.

When forming skills of collective work, the main role is played by the practical tasks. Practical tasks have to be fairly wide, creative, promoting collective initiative of the students and not limiting their individuality. It must be endeavoured that the team of participants, when accomplishing the task, would be able to distribute the work in such a way that the input of all participants would be very important. It is not easy to create such tasks in all courses, but where it succeeds, the results satisfy course curators as well as participants.

When creating DL courses “Statistical analysis of business environment” and “Modern information technologies in public administration” we attempted to follow above listed principals. We have chosen tools to prepare distance learning courses that would allow implementing all aspects of collective-team work. Our courses were installed in Blackboard and CDK systems that widely promote teamwork using e-mail, chats, bulletin board, Whiteboard and file exchange.

Considering that, we foresaw for each team of first year students three tasks. They covered different themes of theoretical course and allowed to study in stages. For the second year students bigger teams of 4-5 persons were formed, and only one big task was foreseen which covered all material of the course and demanded constant and cohesive teamwork during the whole time of the course.

The distance learning courses can be found on the Lithuanian distance learning website <http://herculus.ktu.lt:8080/cms/liedm/app>. This site

also demonstrates the increasing popularity and quality of DL courses.

### 3 PROBLEM ANALYSIS BY USING SURVEY RESEARCH

The survey research was prepared in order to find out the opinion of the participants of various aspects of distance learning courses, including effectiveness, sources of positive and negative outcomes and usefulness of implementing them in DL courses.

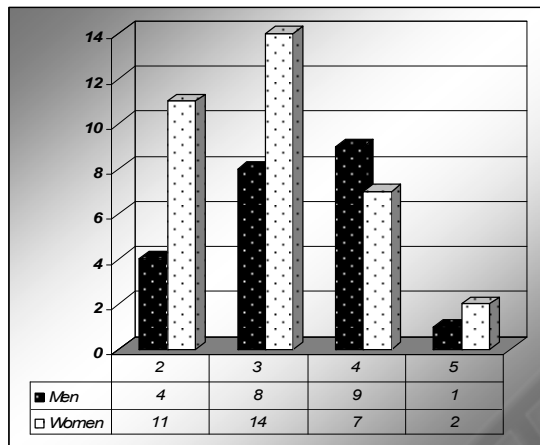


Figure 1: Preferred number of team members.

The survey was answered by 56 participants of two DL courses: 31 participants of the course “Statistical analysis of business environment” and 25 participants of the course “Modern information technologies in public administration.”

The idea of application teamwork in DL courses was evaluated positively by 89.3% respondents. Only 6 members preferred to work individually, as they experienced disappointment by their team. Defining optimal size of the team appeared to be very important issue, where men and women had diverse opinions to it (Figure 1).

Men preferred bigger teams of 3-4 people, and women would rather work in teams of 2-3 people. The question of team forming principles had two opinions: men preferred to choose team members themselves, while women tended to agree to group in accidental order. Almost 95% of respondents (53 participants) claimed that most productive teams will be mixed, but consisting of different number of men and women. Most popular suggestions for the team composition were 2 men and 1 woman or 1 woman and 2 men.

Majority of respondents agreed that the tasks where teamwork could be most important were elaboration

of the final project and passing interim tests. As respondents noted, participation in teamwork had no influence to studying and accomplishment of individual self-control tests.

Definition of roles inside the team was among the most important issues. The team leader and report writer roles were accepted without any doubts. But the opinions about the need of other recommended roles (Schoop et al 2005, 2006), such as problem analytic, critic, researcher, and guru in computers were rather diverse. The opinion of men and women differed a lot while ranking most important qualities of team members. Men would like that their partners would be initiative (determined), intellectual and friendly, while women put friendship, punctuality and intellectuality to the first place (Figure 2).

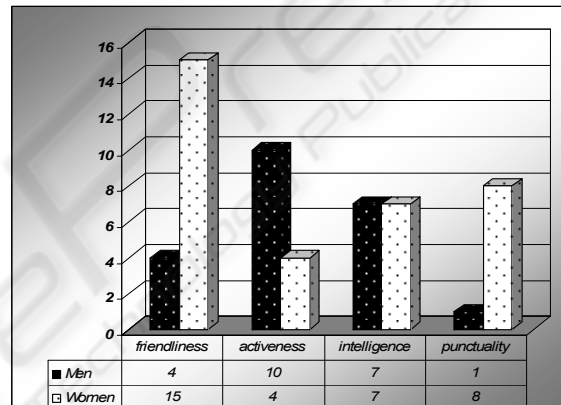


Figure 2: Team members qualities' repartition.

Though DL is generally considered to provide more freedom of time planning for the learner, the teamwork was evaluated as time consuming activity, therefore one of important issues was to plan the workload both for studying DL materials and to communicate within the team. 85% of respondents stated that distance studies for one subject should not exceed 4 hours a week. The teams would agree to contact twice a week regarding solution of self-control tasks.

Though there is several evaluation systems suggested in the research literature, the mechanism for knowledge evaluation should be discussed with the learners, as no system could be rigidly adopted without loss of motivation or productivity. If the task is meant for team, is it sufficient to have team evaluation? All respondents wanted to be evaluated as the team. However, in the higher education school, we have to evaluate students individually for the knowledge they show. One of the solutions was to assign the same grade to all team members. In our survey we tried to find out, what kind of evaluation

seemed most fair to students themselves. We were surprised by the result. Respondents unanimously agreed with the opinion, that in small teams of 2 persons, their evaluation marks should be equal. For bigger teams, the most acceptable way of individual evaluation for students was to use self evaluation surveys, which would reflect the individual input of each team member, and which could alter individual evaluation by one mark from general evaluation of the team result. Therefore every member of the team evaluated the input of the other members by giving them marks up to ten, and according to the results, the moderator of the course assigned the final evaluation. Let's say the group consisted of 4 members: A, B, C and D. The general evaluation of their work was 8, and the distribution of self evaluation inside the team as in Table 3:

Table 3: Internal team evaluation.

	A	B	C	D
A		6	3	1
B	5		3	2
C	7	3		0
D	4	3	3	
Total	16	12	9	3

Final evaluation of every team member was adjusted according to the rule: one point was added for the best member of the team to the team mark 8, which was given by the moderator, and one point was deducted from the team member with worst input. Therefore A will be evaluated 9, B and C – 8 and D only 7.

#### 4 SUMMARY

The article presents research of teamwork skills formation in the distance learning environment. The features of learning in virtual teams were specified, communication tools, activities and levels of virtual teams were discussed. The empirical research by means of survey was aimed to analyze the most effective size of teams, preferences of characteristics of team members.

The survey outcomes confirmed the hypothesis, that students prefer teamwork in groups of 3-4 people, mixed of men and women. The best ranked qualities of team members were friendliness, activeness, intelligence and punctuality. Despite wide selection of communication tools of the distance learning environment, the most suitable forms of communication for the team were contact in person, real time chat, e-mail and SMS. The final

evaluation issues were one of the most time consuming activities for the tutor. Though the final grade consisted of the individual and team components, the research revealed, that the differences in final grade depended of the team size. The marks should not differ for both members of two-person teams, and for bigger teams it could not differ in more than one mark from the general team evaluation, given by moderator, while the mark of the best ranked team member is upgraded, and the mark of the worst is lowered.

In conclusion we can state that accomplishment of tasks in teamwork not only helps students to master the course easier, but also increases the motivation of studying and prepares them for the future career activities in the working teams.

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