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Summary

The paper considers usage and effects of discussion groups in interactive online education. Using asynchronous discussion groups in a process of learning, students evaluate their knowledge and skills in the context of teaching program. There are suggested framework of usage of discussion groups in solving problems in cooperation with other students, members of their group, and receive feedback information, regarding results of their seminar and application activities. Discussion groups are used in seminar discussion and evaluation and in solving problems within computational exercises Α survey about using discussion groups in education was conducted. The results of survey shown that combination of online and direct learning, makes teaching more interesting, and motivates students to learn and research.

Key Words:

Online Learning, Online Classroom, E-Learning, Combined Learning, Blended Learning, Discussion Groups, Asynchronous Discussions, Blackboard, Forums

1. Introduction

New generation of information and communication technology based on the Internet, learning objects, and user-oriented and flexible discussion groups creates the conditions for organisational transformation of classes, thereby increasing the quality of learning process at higher levels or dimensions. New generation of ICT solutions is a catalyst for change in the paradigm of the entire learning process in all its segments or dimensions. In other words, by introducing changes in organising, and conducting classes to enchance the quality of learning, we are able to link together all essential segments of the learning process in an inventive and systematic way.

Students participating in discussion groups can evaluate their knowledge and capabilities, and learn through actual examples in cooperation with other students, members of the group. They promptly receive feedback from a professor on the results of their tasks. The new approach to a combined online and direct learning makes classes more interesting, and the students more motivated to study and explore. Well organised and systematically planned classes can motivate and make students interested in learning so much that an effort or obligation can become fun and entertaining.

The research on possibilities and ways to use discussion groups in interactive online learning has the following integral parts: 1) Presentation with a projector, 2) Learning objects that represent teaching materials, which are interrelated and displayed on the course web site, and 3) Asynchronous discussion groups. Already at the beginning of the research process significant results were revealed. Different approaches were used in the online learning concept.

In this paper we discuss functioning and effects of discussion groups in a combined online learning process. Discussion groups were used to support the preparation and presentation of seminar-papers and discussions, and resolving problems within the scope of computer practicums.

The main hypothesis of this research is that discussion groups in blended learning have a significant impact on:

1) communication between professor and student and between students (peers to peers)

2) encouragment of active participations and critical thinking in discussions

3) and sinergy of individual and group work.

2. Scope and characteristics of blended learning

New generation of information and communication technology based on the Internet, learning objects, and user-oriented and flexible discussion groups creates the conditions for organisational transformation of classes, thereby increasing the quality of learning process at higher levels or dimensions. New generation of ICT solutions is a catalyst for change in the paradigm of the entire learning process in all its segments or dimensions. In other words, by introducing changes in organising, and conducting classes to enchance the quality of learning, we are able to link together all essential segments of the learning process in an inventive and systematic way.

E-learning is a process of education (learning and teaching) that implemented using some form of information and communication technology (ICT), with the aim of improving the quality of the process and the quality of education outcomes. Types of e-learning may be sistematizied as: 1) in-class or "face to face" learning (F2F), 2) blended learning (mixed mode, hybrid) and 3) fully online learning [7]. Blended learning in educational research refers to a mixing of different learning environments. It combines traditional face-to-face classroom methods with more modern computer-mediated activities. According to its proponents, the strategy creates a more integrated approach for both instructors and learners [9].

By combining online learning, we are able to carry out educational programs partly online (using Internet), and partly in a traditional way (face-to-face). The objective of the combined online learning is to join the best characteristics of learning in a traditional classroom together with the best elements of online learning aimed at achieving pro-active approaches to learning, and the rationalization of time spent in the classroom as well as increasing learning productivity.

The following elements are joined together in combined online learning:

- 1. Online educational environment and traditional face-to-face environment
- 2. Online methods and traditional methods of learning and teaching
- 3. Media for submission of teaching material

The combination of traditional and online classes allows students to use discussion groups to express and argument their opinion in order to share it and discuss with other students, thereby largely contributing to better understanding of tasks and more constructive learning.

The potential of combined online learning is in the fact that it represents a natural process of evolution from traditional learning methods towards more flexible forms of individual and team learning based on information and communication technology. Such learning method is an opportunity for integrating inovative technology offered by online learning and traditional education.

The following are the main characteristics of combined online learning [1], [8]:

- Parallel direct and online learning based on the principle of comparative advantages
- Combined learning is interrelated and complemented by online learning, which is independent of time and space
- All necessary teaching material available in one place
- Teaching material may be stored on the Internet and presented in the form of learning objects
- Enabling easy, quick, creative and effective communication between participants
- Enabling integrated utilisation and an easy passing between synchronous and asynchronous discussions during classes
- Using comparative advantages of asynchronous and synchronous discussions
- Using new generation of ICT solutions based on the Internet to support interaction on a higher level for all aspects of combined online learning
- Professor Students, Students Students, Professor – Teaching Material, Students - Teaching Material
- Students are pushed to take a pro-active approach and develop self-discipline

3. Discussion groups in blended learning

By participating in asynchronous discussion groups, students are able to evaluate their knowledge and capabilities in the context of a teaching program, and use concrete examples of problem solutions in cooperation with other students, members of the group. They promptly receive feedback on the results of their tasks. The new approach to a combined online and direct learning makes classes more interesting and the students more motivated to study and explore. Well organised and systematically planned classes can motivate and make students interested in learning so much that an effort or obligation can become fun and entertaining.

Discussion bord are often seen as an equalizing which encourages universal participation in tool. discussion compared to face-to-face dialogue". The discussion bord can be defined as an asynchronous tool which allows the exchange of ideas, debates and collaborative learning in online discussion groups. The options for defining discussion boards are as varied as discussion boards themselves. Basically, a discussion board can be defined as a web application where people can discuss different topics through individual (whether personal or scientific information) posts. There are specific discussion boards that are designed to join people with similar characteristics (students of a certain major or university) and similar knowledge backgrounds to discuss more technical information and even give opinions and make predictions about the state of the art and the future of the field being discussed. In this way, discussion boards become not only banks of information but generate ideas and trigger potentialities [2].

Most online discussion boards implement threading. Threading is a way of displaying messages and replies to messages in an easy to follow format so that when a participant enters, he sees an indented list of messages (Horton & Horton, 2003, cited in Gonzalez Moreno, 2011). Usually, the first message is the main message of the thread or topic and the messages indented under it are the replies or comments to the main message [6]. A thread (sometimes called a topic) is a collection of posts. A thread is defined by a title, an additional description that may summarize the intended discussion, and an opening or original post (common abbreviation OP, which can also mean original poster), which opens whatever dialogue or makes whatever announcement the poster wished. A thread can contain any number of posts, including multiple posts from the same members, even if they are one after the other [4].

4. Advantages of Combined Online Learning (Blended Learning)

We discuss the advantages of combined online learning by bringing together the advantages of online learning and face-to-face classes. Table 1 lists the advantages of the forum given by the students, with flexibility of access being considered the greatest advantage [5]. Students found this flexibility useful for both the discussion and accessing up-to-date subject information. This is consistent with other researchers who also found indications of similar advantages in flexibility (Tiene, 2000; Barnes, 2000 cited in Ellis, 2001).

Disadvantages of the online forum listed by students were mainly to do with the lack of immediacy of response and lack of the interactive features of conversation that caused the forum discussion to be more constrained (see Table 2). Table 2 lists the disadvantages of online forum, what can be perceived as the advantages of face-to-face learning as against learning exclusively via online forums [5].

Table 1: Advantages of online over face-to-face discussion listed by students

Advantage	No. of
Auvaniage	NO. OJ
	respons.
It is convenient in time and place.	16
It is more equitable – especially for quieter	14
students	
 more students participate. 	
Details of the discussion remain. One can	9
backtrack and read a message.	
Allows the more reflective thinking student	7
to participate more.	
The asynchronous nature allows for a more	7
considered response.	
The lecturer is seen as a moderator rather	4
than a teacher.	
It allowed for discussion with students from	3
other class groups.	
The lecturer becomes just one of the group in	3
discussion.	
More freedom and more likely to express	3
opinions and comment on other's remarks.	
It is possible to choose what to participate in	2
and one can multitask.	

Table 2: Disadvantages of online forum listed by students

Disadvantage	No.of
	respons.
It wasn't possible to read face-to-face	10
nuances such as body language	10
Took away the features of conversation (e.g.	7
immediacy of response, interactivity)	/
It was difficult to get an indication of depth	4
of feeling or a person's response	4
Some students relied on others to post - only	Λ
contributed in any one discussion	4
Discussion threading can become confused,	2
allowing discussion to go off-track	3
There was a tendency not to post when in	2
agreement	3
It is possible to opt out of the discussion, and	
the extended time for the	2
discussion delays conclusions being reached	2
or causes the topic to go off track	

The most important advantages listed by students were the convenience in time and place, objectivity and impartiality, easier access to discussion forums, and possibility of backtracking and rereading messages. On the other hand, main advantages of the face-to-face method perceived by students to be lacking in online discussions were mainly to do with the possibility to read face-to-face nuances such as body language, and features of conversation such as immediacy of response and interactivity. Blended learning creates the conditions for an integrated realization of all listed advantages.

5. Framework for usage discussion groups to encourage critical thinking

Theme of the seminar involves researching on the business information systems. The research was conducted through questioning and interviewing successful managers and informaticians well knowing the business process and information system of a company. The research task was defined in the introductory message. Scheme 1 shows the introductory message and file attached containg the research plan. Students were given the topic for the discussion early in the course and instructions were provided to the students as to what was expected in the discussion forum. The research task were given as a guide to encourage higher level critical thinking.

In their seminar presentations and discussions, the students questioned each other via discussion groups, gave answers to the questions, compared answers, and evaluated contents of their seminar papers by way of interfacing their knowledge, cognitions and cosiderations. In resolving problems within the scope of computer practicums, teaching materials are displayed on the web site in the form of learning objects. Each learning object has excersices attached (for instance, problem of optimum project schedule may be presented in an Excel table). By participating in discussion groups, the students were able to offer solutions to a problem, while the moderator (professor) was giving feedback on the correctness of results.

Methodological framework for discussion groups to encourage critical thinking was used according to the concept presented by Garisson and Hara [3]. In the first column in the table are the stages of critical thinking. In the second column are indicators of critical thinking. In the third column, the levels of discussion correspondes with categories of critical thinking. As a framework indicators use discussion groups to encourage critical thinking used is the number of pages (content topics are copied into Word). Table 3. shows that each category (stage) corresponds to the relevant level of use of discussion groups. Table 3. Framework for usage discussion groups to encourage critical thinking

Category	Indicators	Level	Number of messages	Number of Pages (in Word)
1. Triggering	Recognizing the problem Sense of puzzlement	Reading and studying seminars of other groups, the choice of one preffer group (seminar), asking questions	21	8
2. Exploration	Divergence within online community Divergence within single message Information exchange Suggestions for consideration Brainstorming Leaps to conclusions	Answers to questions, the first level of seminar evaluation	18	20
3. Integration	Convergence among group members Convergence within a single message Connecting ideas, synthesis Creating solutions	Merging all groups (seminars), reading and studying the answers to questions, set up new questions	22	10
4. Solution	Vicarious application to real world Testing solutions Defending solutions	Evaluation of the seminar based on proposed opinions, sugges- tions and ideas, the second level of seminar evaluation	18	20
4. Solution (Second Round)		Second Round	13	22

Source: Authors, modified by [3]

The final (highest) stage Solutions corresponds Evaluation essay based on the opinions, suggestions and ideas proposed in the discussion groups. The table shows that this phase is conducted in two rounds. In the first round, all groups gave answers that were more focused on the approval and praise of constructive previous questions of other groups. In the second round students were stimulated with bonus points for a better grade.. The second round was not required. Attention was focused on the most interested students. About 67% students responded (10 teams of 15). Replies in the second round focused on the evaluation and new solutions. Also the responses were more detailed, with more arguments.

6. Implementation of Discussion Groups in Combined Online Learning

We illustrate the implementation of discussion groups on the example of seminar-classes for students in fourth and fifth year of the Faculty of Economics of Rijeka attending the course on Information System Support for Decision Making. Introductory message is the definition of the research task. The research was conducted during the first semester of a first year undergraduate degree course. Class consisted of 50 students who were organized into 15 teams. All the students were enrolled in a computing systems degree and as such were familiar with using information technology.

The course was delivered using a blended learning environment, combining traditional face-to-face activities with web publishing, on-line review and discussion forum activities. On-line activity, which included publishing the results of a research project, evaluating the work of peers and participation in a discussion forum formed a significant part of the course. The use of the discussion forum was seen as a way to encourage participation as well as to provide a tool to promote discussion over a period of time to a topic that was a key component of the course curriculum.

First, students formed teams that were presented in the thematic discussion called 'Presentation of Groups and Members'. In the thematic discussion called 'Seminar Papers Presentations', students displayed their seminar papers as attachments and presented the results of their research on the business informatization. Students presented verbally their seminar papers using PowerPoint presentation. Seminar papers remain available to other students, and students are able to backtrack and reread material displayed. This discussion was followed by interrelating groups and members, and asking questions. Scheme 1 shows the introductory message which was written by the professor, being the definition of the discussion task. Students could read seminar papers and analyze research works done by other groups aimed at choosing the group with the most successful or most interesting seminar paper.

Scheme 1: Example of messaging interface

Plan istrazivanja informatizacije poduzeca (1) post by 1 author in infosustav, fib_mp

Translate message to English	
Pri istaživanju informatizao možete koristiti plan istraži koji je postavljen u privitku	cije poduzeća u poslovnoj praks vanja informatizacije poduzeća 1.
Datoteka Plan istraživanja informatiz	zacije poduzeća
Attachments (1)	
Plan istrazivanja informatizacije poduzeca.doc 39 KB View Download	

The scheme 2 indicates that 21 messages (posts) were posted in which students answered to the given task. It is significant that in such discussion groups, professor is seen as moderator rather than a teacher, leading, directing and intervening on an as needed basis within the theme scope, in which process communication between the professor and students is conducted parallel with communication between the students (peer to peers).

Scheme 2. Example of first message

Povezivanje grupa, postavljanje pitanja (Linking groups, asking questions) 21 posts by 17 authors in infosustav fib mp



Scheme 3 shows threads (topics) in discussion forum in Google Groups interface, where interrelated thematic discussions are presented from up to down. The scheme shows as well the number of responses per given thematic discussion. The number of responses indicates that all students were involved in seminar papers and discussions at several levels. After interrelating the groups and asking questions, answers to questions were next. The scheme is the illustration of response in this particular thematic discussion.

Scheme 3. Example of threads (topics) in discussion forum in Google Groups interface

Dis Inf	skusijske skupine i tematske rasprave iz kolegija formacijski sustavi za potporu odlučivanju	6
Edit v	welcome message Clear welcome message	
	★ 💷 Predstavljanje grupa i članova 🍹	19 posts
	★ 📮 Evaluacija seminarskog rada na temelju mišljenja, sugestija i	ideja predloženih 13
	🖈 📮 Odgovori na pitanja, komentare, sugestije i predložena riješer	nja, evaluacija drug 18
	* 📮 Odgovori na pitanja, prva razina evaluacije seminarskog rada	18
	★ 📮 Umrežavanje svih grupa, čitanje i studiranje odgovora na pitar	nja i postavljanje no 22
	* 💵 Povezivanje grupa, postavljanje pitanja	21

In the scheme 4 is the example of answer on the first level of seminar evaluation. It can be seen that a group leader was appointed for each question and answer to that question, being responsible for the quality of presented answer, thereby strengthening and increasing the role of individuals in the group and stimulating synergy between the individual and team work. Croatian to English Google Translator was used in the message display.

Scheme 4. The example of answer on the first level of geminar evaluation

Odgovori na pitanja, prva razina evaluacije seminarskog rada (Answe seminar) 😥 🕡

18 posts by 18 authors in infosustav_fib_mp

DIREKTORI SVEMIRA
Translated by Google - Croatian > English - <u>View Original</u> <u>Always translate</u>
grupa DIREKTORI SVEMIRA odgovara na pitanja grupe Krijesnice: 1. pitanje-vod
DIRECTORS OF THE UNIVERSE group answers the questions the group Fireflie
First the issue-manager David Maruna
Agrokor result in 2009. shows that the company failed adjust their operations to new circumstances, because in recession terms of business managed to maintain or even raise the market share and strengthen its market position by creating added value for all dionike.Kako are two main groups of activities of the Group companies, on the one hand the production of food, and other stores and distribution food, just a day depending on each consumer, it is extremely important the time to identify new trends in behavior and business 2009th year in all essential elements to adapt to new developments in tu.Već market early this year The company is made clear determinants of total adapted certain amount of business recessionary conditions, which included capital discipline, better cash flow management, financial restructuring of short-term debt in the long term, the focus was on management reducing total costs, streamlining operations, increasing efficiency and profitability, and thus creating conditions for raising the competitiveness of companies.

After answering the questions, the following level of evaluation of the seminar paper was next: 'Group networking, reading and studying answers to questions, and putting new questions'. This level was characterized by a peers-to-peers concept, in which process student groups were completely networked. This is also one of the main characteristics of combined online learning, which stimulates interaction not only inside the group but between the groups. In this discussion, besides putting questions students also gave their opinions, presented ideas or suggested other possibilities and solutions as against those being presented in the considered seminar papers. The following is the comparison of the methods and effects of the seminar papers and researches:

- 1) Traditional way using seminar papers by PowerPoint Presentation
- 2) Combined online learning where the traditional method is enriched with thematic discussions via discussion forums

The first, traditional method is basically the process in which every group is focused to its seminar paper (preparation and presentation), where students are not motivated to follow other seminar papers. One of the major characteristics of traditional method of seminar presentation can be illustrated by the following comment given by a student in the questionnaire on the perception of discussion groups in online learning:

"It is boring to listen to presentations given by other groups, which just read the contents of their slides."

The other method allows for the availability of seminar papers to all students, offering the possibility of backtracking and rereading, eliminating psychological and other subjective barriers, and motivating all students to take pro-active approach in discussions and communication both with professor and other students. We illustrate student opinion and motivation regarding combined online learning via discussion forums on the example of the following two comments given by students:

"In group discussions we become very active and efficient; we are inspired to think."

"I like the way of learning and interaction in discussion groups. This is an easier and more interesting way to learn. I really like it, not at all tiresome!"

7. Conclusion

Blended learning is considered to combine the best of both worlds: 1) in-class "face to face" learning and 2) on line learning supported by discussion forums. While in-class online discussion offers the potential for encouraging participation and creating deep learning opportunities in a blended learning environment, making this happen requires good learning design and organisation. The simplicity and flexibility that discussion groups offers has lead to a rapid growth in the acceptance of e-learning as a method of delivering educational training. The use of computer-mediated communication tools, and in particular asynchronous discussion forums, as a means of promoting communication and a collaboration between e-learning participants has lead to a growing interest by the students, profesors and academic community in the educational value of such tools.

This paper looks at the role of asynchronous discussion forums in e-learning and attempts to address the issue of the quality of interaction of discussion forum participants. This research and results of research show that discussion forums in blended learning have a significant impact on:

1) communication between professor and student and between students (peers to peers)

2) encouragment of active participations and critical thinking in discussions

3) and sinergy of individual and group work.

References:

1. Algebra, učilište, Značajke e-learninga

http://85.94.77.116/onama_8.asp (20.04.2012)

2. Cantor, D. I. (2009). Discussion Boards as Tools in Blended, EFL Learning Programs. PROFILE Issues in

Teachers' Professional Development, 11, 2009.

3. Corich, S., Kinshuk, and Hunt, L. M., Assessing Discussion Forum Participation: In Search of Quality, International Journal of Instructional Technology and Distance Learning, 2004., December 2004, Volume 1 Number 12

http://www.itdl.org/journal/dec_04/article01.htm

4. Discussion board, Wikipedija

http://www.facebook.com/pages/Discussion-

board/115180701827200?sk=wiki

www.revistas.unal.edu.co/index.php/profile/article/.../105 50/11012

5. Ellis, A., Student-centred collaborative learning via face-to-face and asynchronous online communication: what's the difference?, Proceedings 18th ASCILITE Conference Melbourne (2001)

Publisher: Biomedical Multimedia Unit, The University of Melbourne, Melbourne, Australia

www.ascilite.org.au/conferences/melbourne01/pdf/papers /ellisa.pdf

6. González Moreno, R. (2011). The Role of Discussion Boards in a University Blended Learning Program.

PROFILE Issues In Teachers' Professional Development, 13(1), 2012.

http://www.revistas.unal.edu.co/index.php/profile/article/ view/20574

7. Strategija e-učenja, 2007. – 2010., Povjerenstvo za izradu strategije e-učenja, Prijedlog strategije za javnu raspravu, Sveučilište u Zagrebu, 2007.

http://www.unizg.hr/fileadmin/rektorat/dokumenti/eucenj e_strategija/E-ucenje-UniZG-Pov-Strategija-za-Javnu-Raspravu.pdf

8. Tingle, J., Prišćan, S., Radionica: Udaljeno učenje, CARNET, Seminar za knjižnice visokih učilišta i znanstvene knjižnice, 10.-11.studeni 2000. www.szi.hr/seminar2000/prez/priscantingle.ppt

(02.04.2012)

9. Wikipedia, Blended Learning

http://en.wikipedia.org/wiki/Blended_learning