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E-FORUM MODERATION AS AN ELEMENT OF BLENDED LEARNING COURSES FOR UNIVERSITY STUDENTS. A RESEARCH - BASED STUDY

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Abstract: *E-forum is widely recognized to be an effective method of students' learning. Research on processes and phenomena in synchronous (SOD) and asynchronous (AOD) discussion at e-forum date back to the first years of the new Millennium and explore both the role and tasks of the moderator as well as complex preconditions of a productive and satisfying students' participation. The present article focusses on moderation of e-forum discussion and in particular, on two crucial and challenging moments in e-forum moderation: opening and closing. The co-authors of this paper have constructed their perspective on e-forum moderation upon analysis of the role of discussion in the teaching/learning process in face to face, e-learning, and b-learning settings. The final remarks and postulates follow conclusions from the original research study.*

Keywords: e-forum moderation, online discussion forum, blended learning, e-learning, discussion, teacher role, student learning, teaching/learning process, AOD, starting a discussion forum, closing down a discussion forum

INTRODUCTION

Traditional teaching methods (like lecture and readings) are efficient enough at basic knowledge acquisition. Bloom's cognitive taxonomy identifies six levels of cognitive taxonomy: (1) knowledge, (2) comprehension, (3) application, (4) analysis, (5) synthesis, (6) evaluation (1956). At this level (the first level in Bloom's taxonomy), there is no room and no need for discussion. But at the next levels (2^{nd} to 6^{th}), the discussion maybe helpful; the higher cognitive level, the more efficient is the discussion as a learning method. "Discussion is a high versatile strategy that can be used not only to help students develop problem-solving skills and to share opinions but also to attain subject matter

mastery" (Gall and Gillett, 1980, p. 98). Therefore, discussion is recognized to be "a key component" of online students' learning (Ertmer et al. 2007).

This notion relies on constructivist ideas on learning and teaching. Both Piagetian and Vygotskian constructivist theories "emphasise the learner taking an active role in the learning process rather than being a passive recipient of knowledge from the teacher" (Thomas, 2013); it is the learner who constructs his knowledge.

There are two main forms of online discussion: synchronous online discussion (SOD) and asynchronous online discussion (AOD). The latter has attracted more researchers' interest.

"An asynchronous online discussion forum may be defined as a text-based computer-mediated communication environment that allows individuals to interact with one another without the constraint of time and place" (Hew, Cheung and Ling Ng, 2010). The authors explain that AOD is regarded to be more beneficial to student learning because:

- all the messages are kept in their original, chronological sequence;
- all the messages are available to all the participants;
- students can view the messages many times and analyse them;
- students can contribute at their own pace;
- students have more time to construct their ideas and to verbalise them what is beneficial to "higher-level learning".

Therefore the AOD "supports student understanding of concepts (…) allows students to share, compare, analyse, criticise, supplement, and apply information from others (…). It promotes group construction of knowledge while fostering individual assimilation and retention" (Baker, 2013).

1. RESEARCH ON ASYNCHRONOUS ONLINE DISCUSSION

Research on processes and phenomena in the scope of online discussion forum date back to the last decade of the second millennium and explore complex preconditions of a productive and satisfying students' participation.

Asia and Europe are world leaders in AOD research, while Singapore, Taiwan, and the U.S. have the *largest numbers of publications* in the field.

In Poland, research papers on the use of asynchronous online discussion are still few. Evidence from Polish research studies shows a minor interest for this type of LMS teaching/learning tools declared by university teaching staff (Chmielewski et al., 2013; Redlarski and Garnik, 2014; Niksa-Rynkiewicz, 2017). But this is about to change soon.

The new "Constitution for Science" introduces doctoral schools as the unique path to academic career and sets higher standards for university teachers' teaching skills. That is why we have to analyse foreign approaches to teaching and learning and to evaluate them.

Systematic reviews of research literature on AOD (Hammond, 2005; Johnson, 2006; Andersen, 2009; Roehm and Bonnell 2009; Hew et al., 2009; Gao et al., 2013; Loncar, Barrett and Liu, 2014; Thomas, 2017) show that the greatest number of studies focuses on student learning effectiveness in asynchronous online discussion environments.

One of the most fundamental conditions of the AOD effectiveness is student participation and engagement resulting in a contribution to the discussion (measured in the number of postings). In his paper published in 1997, Mark Guzdial found that per 18 classes he investigated at Georgia Tech, "the average discussion thread contained only 2.2 messages, which was essentially a single message and a response to that message" (Hew et al., 2007). Similar *research* findings were obtained by other authors. Hewitt observed that limited student contribution in asynchronous online discussions "appears to be a persistent and widespread problem" (2005).

Khe Foon Hew and co-authors (2007) suggest that limited student contribution has its primary causes in student himself (personality traits, lack of motivation, lack of critical thinking skills, discouraging behaviour of other participants, etc.).

Other authors do not *maintain* this proposition, *focussing rather |on "external* factors" influencing student engagement. The most important "external factors" are related to teacher (moderator, facilitator) and other co-participants:

- design of AOD environments (Gilbert and Dabbagh, 2005; Gao, Zhang and Franklin, 2013; Echeverria, Cobos and Morales, 2013; Yilmaz and Yurdugul, 2016),
- teacher role, his teaching skills and engagement (Goodyear et al., 2001; Goodyear, 2002; Mazzolini and Maddison, 2003; Liu et al., 2005; Guldberg and Pilkington, 2007; de Laat et al., 2007; Wang, 2008; Berge, 2008; An, Shin and Lim, 2009),
- other students engagement and group influence (Wasko and Faraj, 2000; Fung, 2004; Brewer and Klein, 2006; Dooley and Wickersham, 2007; Liu and Tsai, 2008; Chan, J.C.C.; Hew, K.F.; Cheung, 2009; Young and Bruce, 2011),
- student engagement with problem content and knowledge construction (Perkins and Murphy, 2006; Putman, Ford and Tancock, 2012; Hull and Saxon, 2009; Lan et al., 2012; de Leng et al., 2009).

A limited student contribution in asynchronous online discussions is not the main topic of this paper. Nevertheless, the first two of the four above-listed points have drawn our attention. From pedagogical point of view a limited student contribution may be regarded as a result of teacher negligence in "design of AOD environments", and inadequate teacher moderation caused by lacking teaching skills and commitment. Discussion (including online discussion) is one of teaching/learning methods – ways in which the aims of education may be achieved – and as such needs proper preparation and moderation. This paper aims to emphasise the teacher's role in the student's successful learning within online settings.

2. DISCUSSION AS A TEACHING/LEARNING METHOD

It was John Dewey who conceptualized discussion as a problem-solving, activating method (Petty, 2014). What is the discussion? According to Polish authors, the discussion is a method that involves "mutual exchange of thoughts and opinions while students work together on a certain issue covered by the curriculum. Not only does the discussion enable problem-solving by adding together the knowledge of respective participants, but it also allows verification of hypotheses and confrontation of various positions and opinions (Bereźnicki 2001, p. 284). In general, educators agree that discussion as a teaching method belongs to the group of methods appealing to the human cognitive sphere. The classical division of teaching methods (Okoń 1998, Bereźnicki 2001, Bereźnicki 2015), where the criterion is the dominant type of activity in a teaching-learning situation, identifies: knowledge assimilation methods (based on reproductive cognitive activity), self-acquisition of knowledge methods (based on productive cognitive activity), evaluation methods (where emotional activity is dominant) and practical methods (characterized by engagement in the practical and technical spheres). According to some authors, discussion belongs to methods relying on information transfer (Okoń 1998, p. 256-257), because its main goal is to exchange opinions.

Joyce, Calhoun, Hopkins (1997) tend to classify discussion as a social model. The authors use the concept of a model because, in their opinion, the trigger of a given sequence of teacher's activities, which is a sequence of teaching activities is the desired model, the pattern of learning. The teaching-learning method, the educational strategy or procedure, is thus a construct that governs the teacher's conduct, based on the scheme of a certain type of learning. The proposed division is by no means an exhaustive description of separate sets. The models may be complementary and intertwined. Based on the criterion of the type of thinking triggered by applying a given strategy or method and the pupil's place in a model, the authors divided the models into four groups: information processing models (the processual and cognitive type), social modes (whose task is to create a community of learners), personality development models

and behavioural models. The thing that the social models have in common is that they create a community of learners - a specific community that generates collective energy called synergy, which, rather than being a simple accumulation of the energies of the respective community members, is its multiplication and facilitates the learning process. All the ideas for various forms of group work are based on the pedagogically proven advantages of learning together. Social models, on the one hand, may serve the purpose of achieving certain, strictly cognitive results (promoting specific types of thinking, solving cognitive problems together, confronting a different - individual or group – perception of a given issue), but, on the other hand, they may stimulate social interactions and build group standards and contracts that, in the first place, enable good collaboration. These models promote pro-social attitudes and readiness to support one another, they help develop democratic decision-making procedures, and enable learning through collaboration, which is a chance for students to develop the skills of negotiating, discussing and listening to one another, managing one's own work and the work of others, accepting responsibilities based on group decisions and, last but not least, learning from one another.

Thus, discussion as a teaching method may be analysed from two perspectives: on the one hand, it may strongly engage the human cognitive sphere, it may trigger advanced processual and cognitive learning patterns that focus on creative problem solving; but, on the other hand, the main goals of a group discussion may be social, focusing on the development of important social skills: listening to one another with understanding, building arguments and counterarguments to support a given position and the ability to change the cognitive perspective to an emphatic "insight", stepping into the phenomenological field of another person by accepting the world of their experiences.

2.1. Other contexts for the discussion method

Transcending the constructivist context (both Piagetian and Vygotskyan) focussed on the intellectual-cognitive sphere of human personality, we can find other interesting contexts; for example, an aesthetical one. Educational hermeneutics, especially in art, literature, or music goes far beyond the acquisition of information. Discussion is a good method to form and develop aesthetic standards and sensibilities. It is indispensable in acquiring and cultivating students' analytical and interpretational skills. In this regard, the discussion should be more sharing- than fighting-like.

Similar effects may be expected in the context of practical skills from craft, dance, sport to actor's craft and music as performance art. In this context, taking part and taking advantage of the essential discussion assumes a certain degree of proficiency. The members of the discussion group or forum should not represent highly unequal skill-levels (Neville).

Social constructionist approach to emotions (Rom Harré and James R. Averill) is different from the approach presented by sociologists recalling Émile

Durkheim's thought. The main difference lays in the conceptualisation of the role of collective (rather than individual) interpretation in the social causation of emotions (Fisher and Chon, 1989, p. 1). Assuming that emotions (at least to a certain extent) are socially constructed and emotional reactions to typical social phenomena are negotiated within smaller and larger groups, we discover another context in which discussion has to be recognized as a learning method. Discussion enforces verbalization of many undiscerned and poorly recognized elements of human experience, becoming an important factor to management and cultivation of emotions.

One other context to be noted is the so-called "humanistic approach" to education relying on Abraham Maslow's psychological theory, developed in the theory and practice of psychotherapy by Carl R. Rogers. PCA (Person-Centered Approach) focusses mainly on the internal functioning of human persons. Rogers argues that learning problems have their sources in internal dysfunctions. The climate of acceptance, understanding, and authenticity fosters "internal healing" and overcoming of individual problems, opening the space for natural creativity. Discussions focussed on interpersonal climate and relationships, concerning acceptance, understanding, and authenticity of group members help satisfy important psychical needs of students and breaking communication barriers (Kościelniak, 2004). This is one of the main preconditions of effective learning.

Online discussion may serve a variety of educational purposes. When the purpose differs, effective environment for interaction and discussion varies. Fei Gao, Tianyi Zhang, and Teresa Franklin (2013) identified four educational purposes that are crucial to successful student learning in online forum discussions:

- fostering an online community,
- "a community of learners, which represents the ideal discussion forum environment, is one in which students embrace a sense of belonging, support each other, develop shared values and enjoy their shared identity" (Maher Palenque and DeCosta, 2015, p. 85),
- encouraging information sharing,
- people do not learn in isolation, but through interaction; a larger and deeper knowledge of individuals is socially constructed,
- promoting critical thinking,
- "conflicting perspectives of students should be carefully examined and developed (…) Learning takes place when students re-examine their original positions on an issue and explore new resolutions" (Maher Palenque and DeCosta, 2015, p. 85). Deeply held beliefs and the origins of those beliefs should be examined,
- supporting collaborative problem solving,

- productive discussions focus on new information drawing on prior knowledge. Student comprehension should be facilitated through intentional questioning to help binding new information to what student already knows. The best way to do this is fostering peer-facilitation.

2.2. The role of discussion within the teaching/ learning process

Despite its relevant potential, the discussion is neither self-sufficient nor universal method, and its educational meaning and efficacy depend on its role in the teaching/learning process and cooperation with other methods.

In his „Practical Guide" to discussion method teaching William M. Welty says: "If you seek to encourage true discussion, you cannot do it by having a discussion here and a discussion there - it has to be a regular and substantial part of the course" (1989, p. 204). The same refers to a single class in face-to-face settings and a single unit of an online course (including modern LAMS - Learning Activity Management System).

3. PREPARATION FOR GROUP DISCUSSION IN THE FACE-TO-FACE AND ONLINE SETTINGS – PRINCIPAL STAGES

Preparation is, in fact, the first but inexplicit, almost "hidden" stage of educational discussion. Numerous research studies confirm that proper preparation of teacher and students is crucial to discussion resulting in operational knowledge acquisition. Thirty years ago Feldman's research showed "the dimensions of teaching that are the strongest correlates of student achievement: (1) preparation and organization; (2) clarity of communication; (3) perceived the outcome of the instruction; and (4) stimulating student interest in the course content. The first two concern the organization of information and its effective presentation and have traditionally been part of a teacher's preparation. The second two deal with motivation and engaging students in their learning" (Theall, Wager, and Svinicki, 2019). "If we want to find ways to help students to internalize the theory" (…) "preparation for a discussion class needs to marry content and process" (Welty, 1989, p. 201). The author implies that "the teacher (…) must be ready for almost any nuance to be discovered, for almost any connection to be made" (ibid.). A meticulously structured outline of important concepts should be prepared because "important concepts usually have somewhat important sub-concepts, (…) and several layers deep in important concepts" (Ibid.).

Only after completing this part of his preparation, the teacher will be ready to decide on contents for students. This is also the right moment to decide on teaching/learning methods that will help students to master the selected contents. There is a large variety of teaching and learning methods and strategies. It is wise to take account of student preferences, which may differ from group to group. Some groups prefer to read assigned texts before the discussion begins.

Some groups prefer, for example, to hear (and watch) multimedia supported lecture and to ask questions until the subject matter is crystal clear to them. From the teacher point of view, the chosen method/methods should be effective – no matter if it is a direct or indirect one. Here we meet another advice from Welty's "Practical Guide": "Before every class, look over your roster and update your knowledge of each student" (Ibid., p. 203).

The key condition of a successful discussion is the proper preparation of teacher and students. How to assure student preparation? How to motivate students to study and to understand the theory they need to grasp? From the present authors' experience, in most cases, achievement, incentive, or competence motivation is more efficient than fear or power motivation.

In the constructivist context, especially within the Piagetian approach, "an incentive," which can activate student's cognitive processes may be understood as a kind of 'perturbation' in student's cognitive structures. The teacher may do it by providing the student with educational resources rich in elements that may act as cognitive 'perturbations'; placing the student in a physical or social environment (or physical and social) that satisfy the same conditions; deliberately presenting the student with 'challenges, novelty and opportunities to learn' taking into account individual cognitive needs and preferences. Facilitation of the student's cognitive processes may be conceptualized as an attempt to restore the disturbed cognitive equilibrium (Sajdak and Kościelniak, 2013).

And here are some more of Welty's pieces of advice: "Once you are sure of your grasp of the facts, prepare a question outline to match your concept outline (…). Ask questions and more questions and still more questions. If you hear yourself making too many declarative statements, the discussion is not going well" (1989, pp. 201-202).

Resuming, it is not enough that preparation-work makes the teacher a Subject-Matter Expert. It has to make him also a "Student-Potential Expert".

4. STARTING A DISCUSSION FORUM

One of the most important things determining the success of a discussion forum is understanding the goal. Otherwise, the popular saying: "if you do not know where you are going, you will get somewhere else without even knowing it" will become painfully true.

Polish authors usually distinguish three key stages of a discussion: (1) opening and introduction; (2) discussion; (3) recapitulation of the results and closing down (Bereźnicki 2001, p. 285). Our focus is on the first and the third stage.

Before we go to the first stage, it is worth mentioning that in an asynchronous activity, which a discussion forum is, there is no time or space to correct or clarify what one has said in response to the slightest (also non-verbal) signs of not being

understood by other members of the discussion group. A post once published starts to live its own life, and even though it may be clarified, explained, or asked about, there will always be a shift in time. Thus, it is vital to know the importance of the goal of a forum and to formulate a relevant question to encourage a discussion.

Preparation work well done by the teacher and students, an online discussion forum can be opened easily – with one single question which works like a burning match setting fire to properly prepared campfire.

Let's stop here for a moment. Even the best preparation and the best discussion outline is not enough unless we cannot stay open to the ongoing situation.

An exemplary situation. A teacher opens discussion asking students: *What do you think of the possibility of opening all forms of university classes and make them optional?*

This specific question was asked to initiate and encourage discussion on more general educational problems, but instead triggered a heated discussion on the values of freedom and responsibility. Finally, students, together with the teacher, decided that attendance at the classes during the whole course will not be checked. The result - almost 100% course attendance (face-to-face and online). That was a nice surprise, although most of the teacher's preparation work turned out to be useless.

The story was mentioned to introduce a "golden thought" concerning educational discussion consisting of only one word – flexibility.

5. MODERATING A DISCUSSION FORUM

Online forum moderation/facilitation requires much attention and activity on the part of the teacher. One can fall into the extreme and, for example, start a forum and then remove from it and leave the discussion to itself, or, to the contrary, follow the posts meticulously and answer almost every single one of them. Both options bear an error and lead a discussion to failure either because of being neglected or because of excessive control.

The online forum researchers and practitioners agree that the moderator's role is a complex one. David L. Baker distinguishes four moderator's roles: **pedagogical** (planning and organizing, introducing AOD, using groups, setting boundaries), **social** (creating comfort, promoting cohesiveness, preserving presence, guiding netiquette), **managerial** (enforcing boundaries, employing icebreakers, assessing performance, handling dysfunction), and **technical** (**e**stablishing transparency, aiding learning curve, supporting technology, preparing for contingencies). (2013, p. 19).

The author admits that his review "has limitations". Still, it provides us with better insight into the forum moderator's role complexity. Teacher moderating an online discussion forum must know his roles and tasks. He should know what kind of work can be done by students themselves and what kind of work – cannot and should not.

Very similar teacher/moderator's roles we can find in Baran, Correia and Thompson study: managerial and instructional design, pedagogical, technical, facilitator, social (2011, p. 433). In their research study, Nandi, Hamilton and Harland assign typical teacher activities to these roles:

'Managerial and instructional design
- providing administrative guideline
- declaring expectations

Pedagogical
clarifying questions and problems
- periodic intervention to direct and extend discussion
- promoting deep learning
- raising new questions

Technical
- proving technical assistance

Facilitator
- providing direct answers
- providing feedback (+ with examples)

Social roles
- initiatives for community building' (2012, p. 26; Table 6. Ideal roles of an instructor and how to implement them).

6. CLOSING DOWN THE DISCUSSION FORUM

The average duration of a forum hasn't been experimentally determined. Within the present authors' experience it was 24 days, but some of the forums lived even for 64 days.

Most practitioners recommend intentional closing down of a forum, e.g., with a post that summarizes the topics discussed or the opinions expressed, a post thanking all the participants for their activity, or a post inviting to a new project or another meeting in a virtual or real space of the university. After such a post, students should be allowed to express their final thoughts or ask questions, and the moderator should once again say goodbye to all.

7. THE AUTHORS' RESEARCH

We have verified two models of moderator's roles in online discussion; the one presented by David L. Baker (2013) and the other by Baran and Coreia (2011).

We were able to undertake such a verification thanks to collected and saved data from online courses led by Anna Sajdak Burska. From 2009 to 2017 Professor Sajdak-Burska led 37 b-learning courses for tertiary and post-graduate students at Jagiellonian University (Cracow, Poland). An approximate number of students involved was 750. Jagiellonian University uses Moodle LMS (almost 5,5 thousand active online courses per year). Instructors have access to several tools and reports that can be used to assess student performance. All the relevant data of online courses (outline reports, complete reports, today's logs, all logs, including teacher activities) were collected and preserved for research purposes. The preserved data of Anna Sajdak Burska's online courses were analysed using the IBM SPSS Statistics 25.0.

The first stage of the quantitative analysis *was undertaken* regarding a set of categories of forum moderator's role assumed by Baker (2013) and Baran and Coreia (2011). The analysed research data fulfilled all the assumed categories but did not consume all the research data – some data were "left over".

The interpretation of these research findings led us to an extended model of the moderator's role in the online discussion forum. Research evidence led us to a conclusion that the moderator's sub-roles should be differentiated according to a criterion, which is moderator focus. In our research study, the moderator was focussed on:

- individual student learning, group and sub-group learning in the problem-solving process (38,5%)
- the discussion itself (opening and closing, student participation, misleading threads, excessively exploited threads, deserted threads, "traffic jams", break-downs, etc.) (23,6%)
- group climate (15,5%)
- motivation (13,4%)
- other (9%)

Within our model of the moderator's role, there is no room for preparatory work. It belongs rather to the teacher's/instructor's role. Moderator's activities within sub-roles are more similar to those we know from Baker (2013), Baran and Correia (2011), Gao, Franklin, and Zhang (2013), Nandi, Hamilton and Harland (2012), or any other research papers.

1. Individual student learning, group and sub-group learning in problem-solving process

- Asking and answering questions
- Clarifying questions and problems
- Providing extra learning materials
- Consulting
- Providing feedback

2. Discussion itself
   - Monitoring performance
   - Assessing performance
   - Setting and enforcing boundaries
   - Closing down threads
   - Opening new threads
   - Releasing "traffic jams"
   - Preserving visible presence (Baker, 2010)
3. Group climate
   - Monitoring emotional quality
   - Providing emotional support
   - Mediating
   - Restoring a good climate
4. Motivation
   - Encouraging
   - Providing incentives
   - Recalling individual interests
   - Underlining student knowledge and skills
   - Reaffirming student self-worth
5. Other
   - Explaining moderator's and students' posts
   - Repeating explanations
   - Solving student problems loosely connected with the forum ("by-the-way-problems").

The present authors' model should be regarded as a hypothetical one. Nevertheless,

it confirms a more general notion concerning the need for such concepts and reliability of their construction.

In our study, the number of posts contributed by students and the duration of the forum may be regarded as a quantitative confirmation of the reliability of the effectiveness of the assumed teacher activity model. Table 1. shows the number of posts and duration of the forum in two cycles of online courses led by Anna Sajdak Burska.

Table 1.

Number of posts and duration of the forum - cycles I and II

Cycle 1. Forum no.	**F1**	**F2**	**F3**	**F4**	**F5**	**F6**	**F7**	**F8**	**F9**	**F10**
Number of posts	13	7	10	10	43	14	44	38	18	19
Duration of the forum (days)	32	16	30	5	64	34	29	65	36	40
Cycle I Forum no.	**F11**	**F12**	**F13**	**F14**	**F15**	**F16**	**F17**	**F18**	**F19**	**F20**
Number of posts	8	7	16	23	23	25	18	29	10	14
Duration of the forum (days)	17	5	24	28	25	45	37	33	26	30
Cycle II Forum no.	**F21**	**F22**	**F23**	**F24**	**F25**	**F26**	**F27**	**F28**	**F29**	**F30**
Number of posts	16	7	17	19	10	22	15	13	27	26
Duration of the forum (days)	14	9	15	7	7	14	12	18	32	28
Cycle II Forum no.	**F31**	**F32**	**F33**	**F34**	**F35**					
Number of posts	21	18	13	18	24					
Duration of the forum (days)	15	13	12	16	15					

Source: Own work based on the authors' research.

The statistical average of the number of posts in a forum was approximately 19, but the actual number differed between 7 and 43 posts per forum.

8. THE FUTURE OF THE ONLINE DISCUSSION FORUM

Designing an online discussion forum requires not only pedagogical, managerial, social, and technical competences. It also requires a lot of professional experience. As well as moderating such a forum. There is no doubt that the variable, which is the professional experience of the teacher makes a difference in results from research studies on online discussion fora. This paper, like many other papers concerning online discussion forum, confirms the general conclusion that despite differences in existing studies we have already enough research evidence to create comprehensive models of teacher roles in designing and moderating online discussion fora and to develop these models identifying adequate and more detailed analytical categories.

That means we have already a theoretical base to create computer programs to support the teacher in designing not only online fora, but also the whole online, b-learning, and face-to-face courses. Engineers working in many disciplines have their CAD systems (Computer Assisted Design). Why not the teachers? There are economic reasons behind it, yet there are no scientifically justified reasons.

Monitoring relevant variables in discussion forum processes do not require very sophisticated software. A properly designed computer program could provide the teacher with important feedback. And a CAD for teachers cannot be more expensive than investments in "teacher quality".

Science-fiction? Why? A lot of concepts were science-fiction ideas in their beginnings.

REFERENCES

Andersen, M. A. (2009). Asynchronous discussion forums: success factors, outcomes, assessments, and limitations. *Educational Technology & Society*, 12(1), 249–257.

Baker, C. (2010). The Impact of Instructor Immediacy and Presence for Online Affective Learning, Cognition, and Motivation. *The Journal of Educators Online*, *7*(1), 1-30.

Baker, D. L. (2013). Advancing Best Practices for Asynchronous Online Discussion. *Business Education Innovation Journal*, 5(1), June 2013, 11-21.

Baran, E., Correia, A., Thompson, A. (2011) Transforming Online Teaching Practice: Critical Analysis of the Literature on the Roles and Competencies of Online Teachers. *Distance Education, 3*(32), 421–439.

Bereźnicki, F. (2001). *Dydaktyka kształcenia ogólnego [The general didactics]*. Kraków: Impuls.

Berge, Z. L. (2008). Changing Instructor's Roles in Virtual Worlds. *The Quarterly Review of Distance Education, 9*(4), 407-414.

Bloom, B. (1956). *Taxonomy of Educational Objectives Handbook I*: *The Cognitive Domain*. New York: David McKay Company, Inc.

Brewer, S. i Klein, J. D. (2006). Types of positive interdependence and affiliation motive in an asynchronous, collaborative learning environment. *Educational Technology Research and Development*, *54*(4), 331-354.

Chan, J., Hew, K., Cheung, W. (2009). Asynchronous online discussion thread development: examining growth patterns and peer- facilitation techniques. *Journal of Computer Assisted Learning*, 25, 438–452.

Cheung, W. S. and Hew, K. F. (2006). Examining students' creative and critical thinking and student to student interactions in an asynchronous online discussion environment: A Singapore case study. *Asia Pacific Cybereducation Journal*, 2(2).

Chmielewski, K., Chomczyński, P., Głowacka, E., Mytkowski, D., Naftyński, M., Niedzielska, E. i Zieliński, W. (2013). *Diagnoza stanu kształcenia na odległość w Polsce i wybranych krajach Unii Europejskiej [The diagnosis of distance education in Poland and chosen countries of European Union]*. Warszawa: KOWEZiU.

de Laat, M., Lally, V., Lipponen, L., Simons, R.-J. (2007). Online teaching in networked learning communities: A multi-method approach to studying the role of the teacher. *Instructional Science*, 35(3) (May 2007), 257-286.

de Leng, B. A., Dolmans, D. H., Jöbsis, R., Muijtjens, A. M., van der Vleuten, C. P. (2009). Exploration of an e-learning model to foster critical thinking on basic science concepts during work placements. *Computers & Education*, 53, 1–13.

Díaz, A. L. i Blázquez, E. F. (2009). Are the Functions of Teachers in e-Learning and Face-to-Face Learning Environments Really Different? *Educational Technology & Society*, 12(4), 331–343.

Dooley, K. E. i Wickersham, L. E. (2007). Distraction, domination, and disconnection in whole-class, online discussions. *The Quarterly Review of Distance Education, 8*(1), 1-8.

Echeverria, L., Cobos, R. i Morales, M. (2013). Designing and evaluating collaborative learning scenarios in Moodle LMS courses. In Y. Luo (Ed.) *Cooperative design, visualization, and engineering* (61-66). Berlin - Heidelberg: Springer.

Fung, Y. Y. (2004). Collaborative online learning: Interaction patterns and limiting factors. *Open Learning*, 19(2), 135-149.

Gall, M. D., Gillett, M. (1980). The Discussion Method in Classroom Teaching. Theory Into Practice 19(2). *Teaching Methods: Learning*

Applications, 98-103.

Gao, F., Zhang, T. and Franklin, T. (2013). Designing asynchronous online discussion environments: Recent progress and possible future directions. *British Journal of Educational Technology*, 44(3), 469–483.

Gao, F., Zhang, T., and Franklin, T. (2013). Designing asynchronous online discussion environments: Recent progress and possible future directions. *British Journal of Educational Technology*, 44(3)/2013, 469–483.

Gilbert, P. K. and Dabbagh, N. (2005). How to structure online discussions for meaningful discourse: A case study. *British Journal of Educational Technology*, 36(1), 5-18.

Goodyear, P., Salmon, G., Spector, J., Steeples, C., Tickner, S. (2001). Competencies for online teaching: A special report. *Educational Technology, Research and Development* 49(1), 65-72.

Goodyear, P. (2002). Teaching online. In N. Hativa and P. Goodyear (eds), *Teacher thinking, beliefs* and. *knowledge* in *higher education* (79-101). Dordrecht: Kluwer.

Guldberg, K. and Pilkington, R. (2007). Tutor roles in Facilitating Reflection on Practice Through Online Discussion. *Journal of Educational Technology & Society*, 10(1), Technology and Change in Educational Practice (January), 61-72.

Hew, K. F., Cheung, W. S. and Ling Ng, C. S. (2010). Student contribution in asynchronous online discussion: a review of the research and empirical exploration. *Instructional Science*, 38(6), November 2010, 571-606.

Hewitt, J. (2005). Toward an understanding of how threads die in asynchronous computer conferences. *Journal of the Learning Sciences*, 14(4), 567-589.

Hull, D. M., Saxon, T. F. (2009). Negotiation of meaning and co-construction of knowledge: An experimental analysis of asynchronous online instruction. *Computers & Education*, 52(3), 624-639.

Joyce, B., Calhoun, E., Hopkins, D. (1997). *Models of learning – tools for teaching.* Buckingham: Open University Press.

Kościelniak, M. (2004*). Zrozumieć Rogersa. Studium koncepcji pedagogicznych Carla R. Rogersa [Understanding Rogers. A study of Carl R. Rogers' pedagogical conceptions]*. Kraków: Oficyna Wydawnicza Impuls.

Lan, F. L., Tsai, P. W., Yang, S. H. and Hung, C. L. (2012). Comparing the social knowledge construction behavioural patterns of problem-based online asynchronous discussion in e/m-learning environments. *Computer & Education*, 59(4), 1122–1135.

Liu, C. and Tsai, C. (2008). An analysis of peer interaction patterns as discoursed by on-line small group problem-solving activity. *Computers & Education,* 50(3), 627-639.

Liu, X., Bonk, C. J., Magjuka, R. J., Lee, S. i Su, B. (2005). Exploring Four Dimensions of Online Instructor Roles: A Program Level Case Study. *Journal of Asynchronous Learning Networks*, 9(4), 29-48.

Loncar, M., Barrett, N. E. and Liu, G.-Z. (2014). Towards the refinement of forum and asynchronous online discussion in educational contexts worldwide: Trends and investigative approaches within a dominant research paradigm. *Computers & Education* 73, 93–110.

Maher Palenque, S. and DeCosta, M. (2015). Talking Techne: Techniques to Establish An Active Online Discussion Forum. *Journal of Instructional Research,* 4, 83-89.

Mazzolini, M. and Maddison, S. (2003). Sage, guide or ghost? The effect of instructor intervention on student participation in online discussion forums. *Computers & Education* 40(3), 237-253.

Nandi, D., Hamilton, M., and Harland, J. (2012). Evaluating the quality of interaction in asynchronous discussion forums in fully online courses. *Distance Education*, 33(1), 5–30.

Neville, B. (2006). *Educating Psyche: Emotion, imagination, and the unconscious in learning.* Greensborough: Flat Chat Press.

Niemierko, B. (1990). *Pomiar sprawdzający w dydaktyce. Teoria i zastosowania. [Benchmark testing measurement. Theory and implementation].* Warszawa: Państwowe Wydawnictwo Naukowe.

Niksa-Rynkiewicz, T. (2017). Podejście nauczycieli akademickich do rozwoju narzędzi e-learningowych na wyższych uczelniach technicznych [The approach of technical university teachers to the development of e-learning tools.]. *EduAkcja. Magazyn edukacji elektronicznej* 1(14), 90-96.

Okoń, W. (1998). *Wprowadzenie do dydaktyki ogólnej [An introduction to the general didactics]*. Warszawa: Wydawnictwo Żak.

Perkins, C. and Murphy, E. (2006). Identifying and Measuring Individual Engagement in Critical Thinking in Online Discussions: An Exploratory Case Study. *Educational Technology & Society*, 9(1), 298–307.

Petty, G. (2014). *Teaching today. A practical guide*. Oxford: Oxford University Press.

Redlarski, K. and Garnik, I. (2014). Zastosowanie systemów e-learningu w szkolnictwie wyższym [E-learning systems implementation in university education]. In B. A. Basińska and I. Garnik (Eds.), *Zarządzanie informacyjnym środowiskiem pracy [Information work environment*

magagement] (77-94). Gdańsk: Wydział Zarządzania i Ekonomii Politechniki Gdańskiej.

Sajdak, A. (2013). *Paradygmaty kształcenia studentów i wspierania rozwoju nauczycieli akademickich. Teoretyczne podstawy dydaktyki akademickiej [Paradigms of student education and of supporting university teachers' professional development. Theoeretical foundations of university didactics]*. Kraków: Impuls.

Sajdak, A. (2017*).* Aktywizowanie uczniów w poszerzonym środowisku uczenia się – możliwości wykorzystywania forum dyskusyjnego [Student activation in an extended learning environment - discussion forum implementation]. *Rocznik Lubuski*, 43(1). 163-174.

Sajdak, A., Kościelniak, M. (2014). Teacher competencies and skills for the enhancement of learners motivation within constructivism-based blended learning. *International Journal of Continuing Engineering Education and Life-Long Learning*, 24(3/4), 219-236.

Theall, M., Wager, W. and Svinicki, M. (2019, 06 21). *Gaining A Basic Understanding of the Subject.* The IDEA Center Kansas State University. https://www.ideaedu.org/Resources-Events/Teaching-Learning-Resources/Gaining-a-basic-understanding-of-the-subject (accessed on 27 May 2019).

Thomas, J. (2013). Exploring the use of asynchronous online discussion in health care education: A literature review. *Computers & Education* 69 (2013), 199–215.

Wang, Q. (2008). Student-facilitators' Role in Moderating Online Discussions. *British Journal of Educational Technology*. 39(5), 859-874.

Wasko, M. M. and Faraj, S. (2000). "It is what one does:" Why people participate and help others in electronic communities of practice. *The Journal of Strategic Information Systems*, 9, 159-173.

Yilmaz, E. O. and Yurdugul, H. (2016). Design and Effects of a Concept Focused Discussion Environment in E-Learning. *Eurasian Journal of Educational Research*, 63, 353-374.

Young, S. and Bruce, M. A. (2011). Classroom Community and Student Engagement in Online Courses. *MERLOT Journal of Online Learning and Teaching*, 7(2). 219-230.