How to Mix the Ingredients for a Blended Course Recipe

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Abstract

Over the last years, the growing ubiquity of Social Media, the emerging mobile technologies and the augmented reality become more deeply integrated into the teaching-learning process and also create new opportunities for reinventing the way in which educational actors both perceive and access learning. The major challenges in education that involve tremendous development and innovation are blended courses/ flipped classrooms integrating Social Media (SM), Open Educational Resources (OER) and Massive Open Online Courses (MOOC) (Johnson et al., 2014). This paper focuses on evaluating the e-learning experiences of various actors in the Romanian educational system. There is a tendency to use virtual learning environments with increasing frequency in higher education, many participants experiencing both online and blended courses. Another issue approached in this paper concerns the relevance of the components of online/ blended courses. In this context, the paper analyzes the importance of these elements with respect to various fields, such as: exact sciences, social sciences, humanistic studies, medical sciences, etc. In conclusion, we identify the most relevant elements in the development of online/ blended courses for various domains. The results will emphasize the standards required for evaluating the quality of online and blended courses.

Keywords: e-learning, blended learning, MOOCs, massive open online courses, online course components, e-learning experience, social media, OER, open educational resources

1. Introduction

Many articles and studies present innovative educational approaches that have been supported by Social Media (Conole and Alevizou, 2010; Hamid, Chang and Kurnia, 2010). Blogs, microblogs, social networks, media sharing sites, social book-marking, wikis, social aggregation and virtual worlds are used increasingly by students and teachers in the teaching-learning process, in research and in professional devel-opment, for communication and collaboration, for sharing resources or for building personal learning environments.

As the classic Learning Management Systems (LMS) are considered too inflexible, offering an instructivist model of education, solutions are studied and tested for a con-structivist approach, centered on the student and linking his/her learning needs to peda-gogy and technology. There are many projects/implementations of integrated platforms, in which the social functionality becomes available inside the LMS, thus speaking about LMS2.0, social LMS, Open Learning Environments or Social Learning Environments (Crosslin, 2010; Dahrendorf, 2010; Mott, 2010; JISC, 2011).

In spite of the effective learning opportunities, the new technologies are embraced by a limited number of teachers/facilitators and educational institutions and there is still a gap between the implied technological and pedagogical aspects. The main reasons for this gap are represented by:

- rigid policies in formal education related to curricular systems and assessment practices;
- teachers' lack of training, time and interest to explore, understand, evaluate and use new technologies in the teaching-learning process (Conole and Culver, 2010);
- scenarios for innovative approaches and best cases are usually presented in a too formal manner by using Learning Design languages and tools, which are difficult to un-derstand by the large mass of educators and, furthermore, there is no direct connection between these scenarios and learning environments (Conole, 2010).

In the Romanian educational system only a blended learning approach is accepted by the agency responsible with the accreditation of educational programs. This is an educational form mediating the transition towards exclusively online courses. Nevertheless, participants in the educational system had the opportunity to participate in online courses in the form of MOOCs or in training programs offered for professional development.

The paradigm shift from traditional face-to-face education to e-learning comes with several challenges. One of the main challenges concerns the assessment of the quality of e-learning (Lewis and Chen, 2010; Davis and Wong, 2007; Donelly and O'Rouke, 2007, Din et al., 2012). This subject is still debatable worldwide. There is an intense study regarding several quality models proposed by various institutions. Therefore it is important for the Romanian cultural context to identify and propose a quality standard to be used in higher education. In order to develop adequate standards, the experience of online course participants needs to be envisaged.

In this context course templates need to be adapted to online education. In order to achieve the quality standards several course elements will be taken into account. On the other hand, the learner-teacher interactions are distinct from traditional education ones, as are the roles and involvement assumed by teachers and learners. The structure and content organization necessary for an optimal e-learning experience and efficiency have equally specific requirements, both pedagogical and technical.

all these challenges, the paradigm shift from traditional to online education can be confusing for both teachers and learners. Most comparisons between e-learning and traditional education have emphasized that it is not the environment, but the instructional design and quality of the online instruction that ensures the course efficiency and students' learning (Clark and Mayer, 2011).

A. E-learning forms and characteristics

There are numerous definitions of e-learning (Fee, 2009), therefore in order to avoid confusion we shall define e-learning in accordance with the purpose of this paper. In agreement with R.C. Clark and R.E. Mayer (2011), "we define e-learning as instruction delivered on a digital device such as a computer or mobile device that is intended to sup-port learning."

In defining the quality of e-learning, three main components were identified: tech-nology, learning content and learning design (Fee, 2009). By combining technology, learning content and learning design various taxonomies or forms of e-learning will result. For example, K. Fee (2009) identifies five models of e-learning: online courses, integrated online and offline learning, self-managed e-learning, live e-learning and electronic performance support. In this paper, we shall examine all three forms of online education familiar to our participants: online courses, blended learning (combining both online ac-tivities and face-to-face traditional methods) and courses designed for MOOC platforms (Lewis and Chen, 2010; Mustea et al., 2014).

The most challenging aspect in developing courses for all forms of e-learning is the instructional design. It is here that confusion occurs most often, since e-learning over-comes the simple transposition of traditional courses into digital form. It is also important to consider the differences between pedagogy, adult learning and online learning, as each involves a different educational design (Tomei, 2010; Imane et al., 2013). E-learning (allagegogy meaning "teaching to transform") focuses on the learner's independence and the changing nature of lifelong learning (Tomei, 2010).

The characteristics of an online learner are essential for adequately choosing course content and for developing online courses by bearing in mind the characteristics of the e-learning instructional design. The online learner has the following characteristics: ability to work independently and in groups, responsibility in completing assignments and readings, ability to learn by using content in various formats, time management and per-sonal organization skills, and the knowledge and skills to use technology (Tomei, 2010).

Other important aspects for developing online courses are: the structure and the components of a course, the multimedia resources, the teacher-learner and the learn-er-learner interaction, the presentation/ delivery mode, and the role and selection of as-sessment methodologies (Naaji et al., 2013).

B. Quality of e-learning

There are numerous aspects to consider when developing an online/ blended course, some of which we mentioned in the previous section. Moving beyond the characteristics of e-learning, there is the issue of quality in online education. Several models of defining e-learning quality were developed over the last decade (Uvalic-Trumbic and Daniel, 2013; Aleksic-Maslac, 2013).

For example, an e-learning quality guide in higher education developed by the Swe-dish National Agency for Higher Education (2008) proposes ten crucial aspects to con-sider when evaluating quality in e-learning:

(1) material/ content,
(2) structure/ virtual environment,
(3) communication, cooperation and interactivity,
(4) student assessment,
(5) flexibility and adaptability,
(6) support (student and staff),
(7) staff qualification and experience,
(8) vision and institutional leadership,
(9) resource allocation and,
(10) the holistic and process aspect.

Other models might emphasize different aspects, such as technology or examination security (Donnelly and O'Rourke, 2007), but there are also common important elements such as institutional vision, instructional design, course structure, student and staff support, and student assessment.

There are several guidelines to what quality in online learning represents, be it online courses, blended learning or MOOCs. But specific guidelines for the Romanian edu-cational system need to be refined, by taking into account both common elements of international guides on e-learning quality, and the cultural context with its constraints. This requirement is becoming more and more stringent as the development of online learning gets exponential.

C. The development of online learning and emerging technologies

Worldwide there is a permanent and rapid development of online learning, as evi-denced by various statistics both in academic and entrepreneurial settings. R. Davis and D. Wong noted that if in 2001 approximately 3 million people were involved in some form of e-learning, in 2006 their number increased to 6 million people (Davis and Wong, 2007). Statistics concerning an American north-eastern university emphasize a growth from 4 online courses in 1996 to over 500 courses in 2010 (Lewis and Chen, 2010).

An increase in using e-learning for training was also noted in the work force. R.C. Clark and R.E. Mayer (2011) present the situation of training delivery via computer in the United States: approximately 11% in 2001, 29% in 2006 and 36.5% at the beginning of 2010

By 2011 the Massive Open Online Courses (MOOCs) movement was materialized in the form of multiple platforms offering open courses to large numbers of students: Coursera, edX, Udacity (Martin, 2012; Leber, 2012). The 2011 fall AI online class at Standford University registered 160,000

students, 23,000 students completing the ten-week course (Martin, 2012). Coursera posted more than 200 free courses taught by professors from more than 30 top world universities (Martin, 2012). Currently Coursera has 538 courses posted in English only. European MOOC platforms, such as Iversity, are also developing (Mustea et al., 2014).

The New Media Consortium (NMC) Horizon Project (HP) is an initiative launched in 2002, which charts the landscape of emerging technologies for teaching, learning, re-search and creative inquiry. The Horizon Project reports, published annually in collabo-ration with the EDUCAUSE Learning Initiative and released with a Creative Commons license (attribution-only), constitute expert research and analysis used by educators, practitioners and leaders across the world to innovate their activities and institutions.

Table 1 depicts the trends in using technology in education, as resulting from the HP reports published over the last years, between 2008-2015. The emerging technologies are classified according to the adoption time in three categories: one year or less, two to three years and four to five years (NMC, 2010-2015; Holotescu, 2015).

Table 1. Emerging technologies in education as reported by the HPR 2008-2015

HPR	One Year or Less	Two to Three Years	Four to Five Years
2008	- Grassroots Video - *Collaboration Webs*	- Mobile Broadband - Data Mashups	- *Collective Intelligence* - Social OSs
2009	- *Mobiles* - Cloud Computing	- Geo- Everything - The Personal Web	- Semantic Aware Apps - Smart Objects
2010	- *Mobile Computing* - *Open Content*	- Electronic Books - *Simple Augmented Reality*	- Gesture-Based Computing - *Visual Data Analysis*
2011	- Electronic Books - *Mobiles*	- *Augmented Reality* - Game-Based Learning	- Game-Based Learning - *Learning Analytics*
2012	- *Mobile Applications* - Tablet Computing	- Gesture-Based Computing - *Learning Analytics*	- Gesture-Based Computing - Internet of Things
2013	- *MOOCs* - Tablet Computing	- Games&Gamification - *Learning Analytics*	- 3D Printing - Wearable Technology
2014	- *Flipped Classroom* - *Learning Analytics*	- 3D Printing - Games and Gamification	- Quantified Self - Virtual Assistants
2015	- Bring Your Own Devic (BYOD) - *Flipped Classroom* *(- Learning Analytics)* *(-Mobile Apps)*	- Makerspaces - Wearable Technology *(- Collaborative Environments)* (-Games&Gamification)	- Adaptive Learning Technologies - The Internet of Things (- Wireless Power) (- Flexible Displays)

The present article targets all the trends expected to be adopted between 2008-2015 (the trends appear in italics in the table above):

- Mobile Applications (the term is similar or close/connected to Mobile Learning, Tablet Computing, Bring Your Own Device and Electronic Books)
- Open Content
- Augmented Reality
- Learning Analytics (as part of the Visual Data Analysis trend in HR2010)
- Massively Open Online Courses
- Flipped Classroom

- Collaborative Environments (Collaboration Webs).

The situation of e-learning in Romania follows a similar trend, even though on a smaller scale. Most Romanian universities use proprietary or open-source LMSs for on-line/blended courses or for course enhancement. During the last years a high percentage of the pre-university and academic teachers took part in online/ blended trainings on eLearning offered by projects co-financed with European funds. Romania also appears active in the OER movement, mainly through initiatives of certain institutions/groups and engaged individuals and through specific projects or programmes; moreover, there are a few initiatives at the government level that can become driving forces (Holotescu, 2012).

While most studies focus on assessing the quality and efficiency of e-learning, only a few of them consider the experience of the actors involved. Therefore, we believe it is impor-tant to take a comparative look at how e-learning, blended learning and traditional education are perceived by learners and teachers.

2. Research Methodology

A. Objectives and hypothesis

The purpose of this study is mostly an exploratory one, more precisely to investigate the importance of different elements used in building and facilitating blended courses from the perspective of all types of actors involved in the Romanian educational settings. A previous research (Naaji et al., 2013) illustrated the importance of online course elements for students, for which further investigation including teachers, administrative staff and students was required.

The first aspect explored in this study was the e-learning experience of participants. Further on, we tested two hypotheses:

(1) There are course elements significantly more important for all participants; and

(2) The importance of course elements differs across domains.

B. Respondents' profile

Based on the findings obtained from the sample group we'll begin with basic infor-mation about the respondents' profile. Who are they? There were 84 participants in this study, with 41% males (35 participants) and 59% females (51 participants). By age, the higher percentages are allocated to the respondents between 46-55 years old (34%) and between 36-45 (26%).

Respondents' demographic data by age
11 individuals (13%) were under 25 years of age
15 (17%) are between 26-35 years
22 (26%) of them were between 36 and 45 years old
29 (34%) are between 46-55 years and
only 9 (10%) of them were older than 55

What is their academic profile? What is their role in education?

Most participants were graduates (39.3%) or postgraduates (54.8%), and only 7% of them were high school graduates or undergraduate students.

The respondents have a wide area of roles in the education system, half of them ac-tivating at university level: Professor – 3%(3); Reader – 5%(4); Senior lecturer – 8%(7); Junior lecturer -2%(2); Researcher - 1%(1); Academic administrator/Faculty develop-ment 3%(3); Pre-university Teacher – 50%(43); Trainer – 3% (3); Student – 14% (12) and Other - 9% (8).

Forty five participants were involved in hard sciences (exact sciences) (52%), while the other scientific affiliations were the following: 13% humanistic studies, 9% eco-nomic sciences, 8% social sciences, 1% medical sciences, and 16% other domains.

We didn't take into account demographic characteristics such as: how many years a member staff worked in education, the type of institution (public or private), the size of the organization, tuition / without fees etc. - such issues will be addressed and detailed in a future research.

C. Instruments

An online questionnaire was developed in order to gather the demographical data and assess the importance of course elements and e-learning experience.

Nineteen course elements were assessed by using a Likert scale with five points, where 1 means "not at all important" and 5 means "very important".

D. Procedure

The participants were invited to participate in the study via a Google form. The form was designed and developed by using the standard features. The public link of the questionnaire was shared via the academic networks of the authors' universities, relevant academic mailing lists, personal learning networks and social web platforms.

The recommended time to complete the form was between 5-10 minutes. The ques-tionnaire was completed online by all participants, ensuring their anonymity and confi-dentiality.

3. Results Analysis

An important aspect of data analysis concerns the e-learning experience of our par-ticipants. Therefore, the first part of data analysis consisted of comparing the different types of experiences. Figure 1 illustrates the percentages of participants checking each type of answer. Thus, we may conclude that only 11.9 percent had no experiences in-volving e-learning.

Among those who had some kind of e-learning experience, most participated in on-line courses (two thirds - 65.5%), blended learning (34.5%) or Massive Open Online Courses (32.1%); the percentage of those participating in MOOCs (nearly a third of the respondents) is quite impressive from the point of view of the interest in this trending model for personal and professional development. It is worth noting as well that almost one third of the responders have experience in facilitating online courses (31%) and more than a quarter (28.6%) facilitated blended courses, which demonstrates the increasing rate of e-learning integration in Romanian education. Nevertheless, we can observe that online courses represented the most common e-learning experience. It is important to mention that all percentages are relative to the total number of participants.

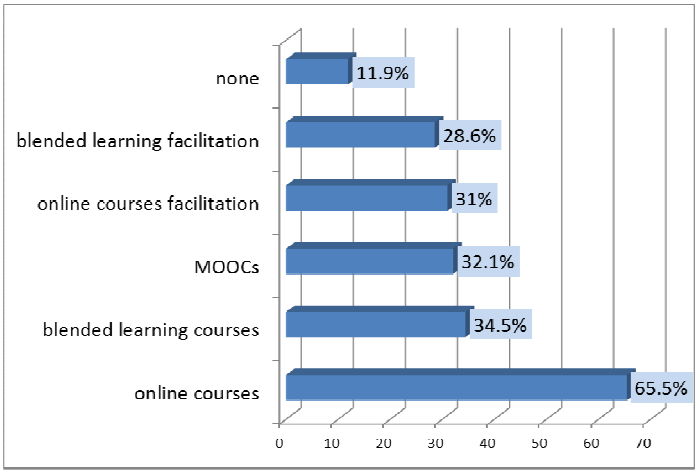

Figure 1. e-Learning experience

In order to assess the interest of the respondents' institutions in creating a specific framework for offering online/blended courses and for training the teachers to develop them, a section of the survey contains the following statements:

Statements related to the respondents' institutio	Yes (%)	Not yet, but I'm interested in this (%)	No (%)
My institution provides access to Open Source LMS (such as Moodle or Claroline)	62	30	8
My institution provides access to proprietary LM (such as AeL or Blackboard)	35	22	43
My institution has specific policies related to online/blended courses	34	37	29
My institution organizes trainings for online/blended courses development	31	31	37

Almost two thirds (62%) of the institutions provide access to Open Source LMSs, while only a third use proprietary LMSs (such as AeL or Blackboard), and we can also note that almost half (43%) of the participants are not even interested in proprietary LMSs. All these figures demonstrate once again the openness of the Romanian educa-tional system towards online/blended learning and, furthermore, towards Open Source or free solutions. Specific policies related to open/blended courses and trainings for devel-oping such courses are offered only by a third of the institutions, thus the education managers and policy makers should pay an increased attention to these issues.

The importance of course elements was assessed on a five-point Likert scale, where 1 means "not at all important" and 5 means "very important". Nineteen elements of an online course were evaluated on this scale. The results synthesized in Figure 2 illustrate the importance of each element for all participants in this study, regardless of their e-learning experience.

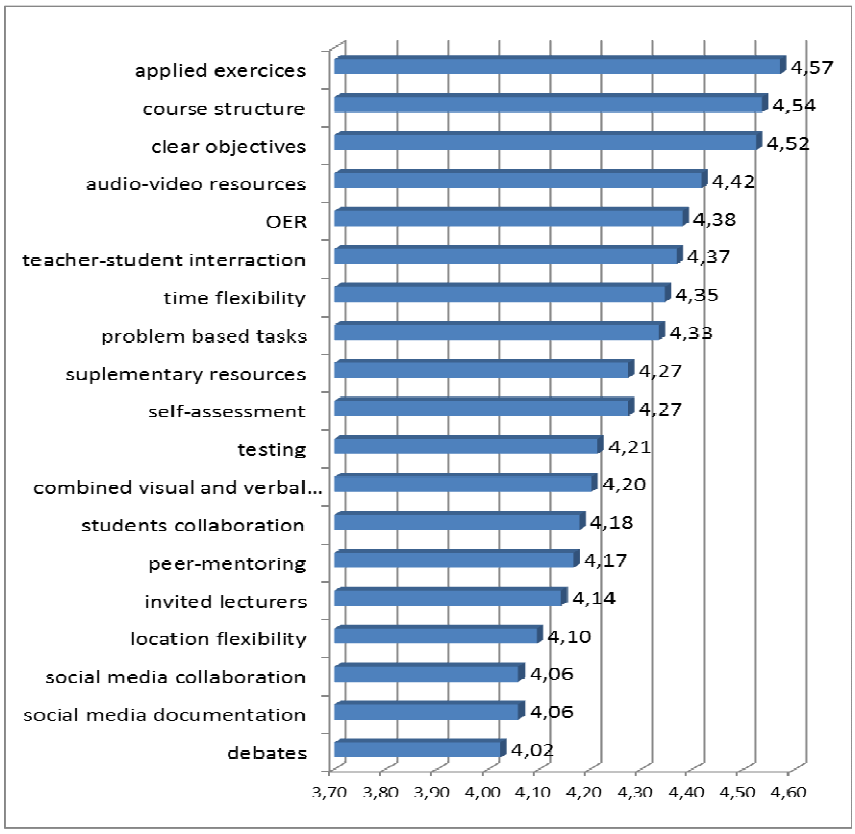

Figure 2. The mean results, representing the importance of online/blended course components, for all participants

Thus, the most important elements of a course were considered to be: applied exer-cises (M = 4.57), course structure (M = 4.54) and clear objectives (M = 4.52). The least important elements of an online course were debates (M = 4.02), social media documen-tation (M = 4.06) and social media collaboration (M = 4.06). Nevertheless, we may no-tice that, on the average, all the elements of an online/ blended course were considered important – all scores represented in Figure 2 are above four points on the Likert scale.

By analyzing the significance of these differences, by using the Analysis of Var-iance, we obtained F = 5.508 at a significance level lower than .001. Therefore, there are significant differences between the importance attributed to the various elements of an online/ blended course.

Furthermore, by using Bonferroni post hoc comparisons, we identified and analyzed the elements of an online course considered significantly more important and those significantly less important. Applied exercises are significantly more important than debates (p = .000), students collaboration (p = .006), location flexibility (p = .006), testing (p = .023), social media documentation (p = .001), social media collaboration (p = .001), invited lecturers (p = .001), and peer mentoring (p = .001). The course structure is significantly more important than debates (p = .002), students collaboration (p = .017), social media documentation (p = .000), social media collaboration (p = .001), invited lecturers (p = .002), and peer mentoring (p = .030). Clear objectives are also significantly more important than debates (p = .013), students collaboration (p = .044), social media documentation (p = .001), social media collaboration (p = .004), invited lecturers (p = .016). There are no statistically significant differences between audio-video resources and any other elements of an online course. There are significant differences only between the elements situated at the two ends of the importance scale. By summarizing these results we may state that all components evaluated are considered important and only some of them were considered significantly different in importance.

Another comparison we made was related to the importance of course elements for various fields of expertise: exact sciences, social sciences, economic sciences, humanistic studies, medical sciences, and other domains. Since there was only one participant for medical sciences, we excluded his results from this comparison, in order to be able to analyze the statistical significance of the observed differences.

The average importance of course elements for each domain is illustrated in Figure 3. The results emphasize the differences in the importance attributed to various course elements. Thus, the elements considered more important by the participants from the field of exact sciences are: peer-mentoring, invited lecturers, social media collaboration, social media documentation, open educational resources, testing, problem-based tasks, students' collaboration, self-assessment, debates, course structure and clear objectives. Participants from the field of social sciences considered audio-video resources and teacher-student interaction as being more important than they were for the participants from all the other domains. The most important elements for the participants from the field of economic sciences were applied exercises, time flexibility and location flexibility. Supplementary resources were equally important for the participants from the field of exact sciences and economic sciences.

When testing the statistical significance for these differences by using the Kruskal-Wallis test, only two of the course elements proved to be significantly different in importance according to the activity domain: clear objectives (chi square = 9.260, p = .026) and problem-based tasks (chi square = 11.279, p = .010). A significance level between .1 and .05 was also found for self-assessment, time flexibility, location flexibility, testing, social media documentation, social media collaboration, invited lecturers. Further research on more homogenous groups might find these elements as being significantly different across domains as well.

The questionnaire also has two open-ended questions asking respondents to list/ identify the main aspects/ advantages and constraints to uptake in an online/blended course, almost all participants having shared their impressions.

The main advantages expressed by participants are listed below:

- possibility to integrate new technologies and pedagogies;
- mobile learning, flexibility in time and space, the possibility to learn and to interact with materials and peers anytime and everywhere, using mobile devices, at one's own pace;

- real-time feedback from teachers, peers, external learners and practitioners;
- a large diversity of resources, adapted to all learning styles;
- access to quality OER and to updated/multimedia resources posted on social networks;
- continuous self-assessment;
- possibility to focus on new topics by using the previous/ tacit knowledge;
- student-centered learning;
- interactivity, imagination, critical thinking and group work are stimulated;
- digital skills are improved;
- the possibility to build your Personal Learning Environments;
- learning communities are nurtured and can continue after the course is over.

The disadvantages of online/blended courses noted by participants are summarized in the following paragraph:

- there isn't a national policy related to the integration of new technologies/ pedagogies, OER in education;
- teachers should be trained to be able to develop and facilitate online and blended courses;
- there are no incentives to reward teachers using open technologies/pedagogies;
- student assessment when using online collaboration and social media could be difficult;
- there should be a team of experts to develop quality online courses;
- the lack of digital skills of both students and teachers could be a barrier for such courses;
- time management could be a challenge;
- the lack of feedback from teachers could demotivate students.

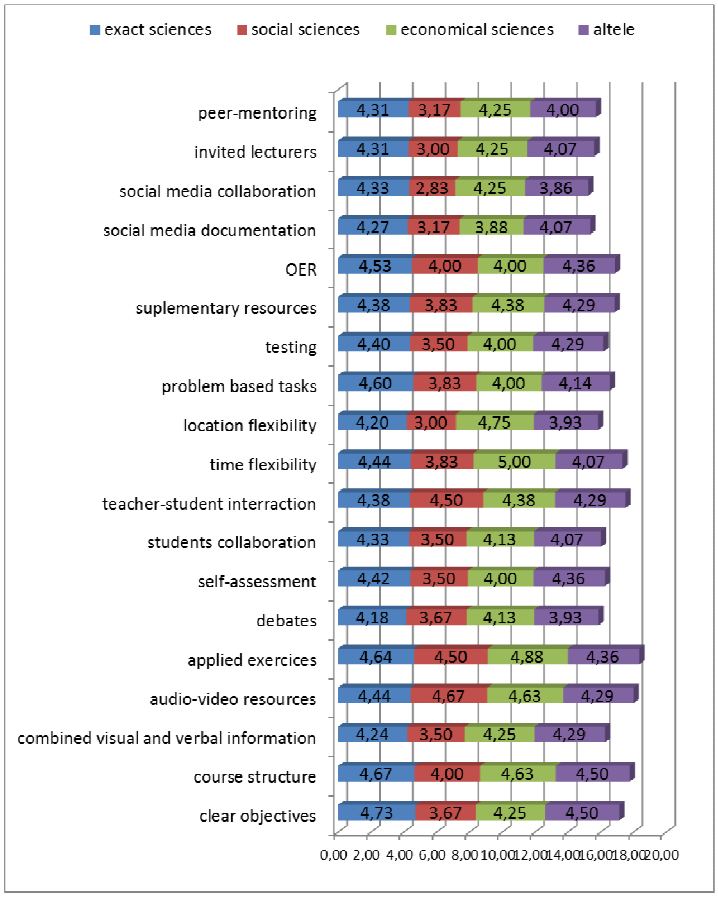

Figure 3. e-Learning components assessment by domain

4. Conclusions

Given the rapid development of e-learning worldwide and equally in the Romanian context, it is necessary to identify the main and quintessential elements of an online/blended course and what defines e-learning quality.

In this research we aimed to identify the importance of the components of an online/blended course. We started from the idea that some of the proposed elements will be considered more important, and that differences will be likely to appear across domains.

Participants varied from the point of view of their e-learning experience, educational background, as well as area of specialization. For all participants, the elements of an online/ blended course proposed in the questionnaire were considered important, all scores being above 4 on a five-point Likert scale. Nevertheless, three course elements were considered significantly more important: applied exercises, course structure, and clear objectives. Differences across domains were also identified (clear objectives and problem-based tasks).

The results demonstrated the openness of the Romanian educational system towards online/blended learning, based especially on Open Source or free solutions.

These results also emphasize and define the directions of future research on e-learning quality and the experiences of all actors involved in e-learning in the Romanian educational system. The need for clear policy regarding the integration of new technology in education is revealed by this study: both by quantitative and qualitative results. Further studies are needed in order to develop clear and comprehensive guidelines for qualitative online/blended courses. Another important need resides in supporting and informing both students and staff about the quality standards of online education.

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