

# Motivational Factors Influencing Students' Use of Online Courses: An Exploratory Analysis

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**Abstract.** *In comparison to traditional university courses, e-learning and blended learning courses require somewhat different sets of skills and competencies from students. Information literacy skills, online communication and collaboration skills, time management skills, a greater degree of motivation, and use of specific learning strategies are among the most important factors for completion of online courses. This paper analyzes the factors related to the motivation of students to participate in online courses. In our preliminary empirical study three factors of motivation to use online courses in a higher education blended learning environment were identified: intrinsic motivational elements, extrinsic motivational elements, and e-learning competency or self-efficacy related elements. The results were discussed in concordance with contemporary literature on such motivational factors in e-learning, including some practical implications for design of e-learning courses.*

**Keywords.** E-learning, motivation, self-efficacy

## 1 Introduction

The skills students need in traditional education may not be sufficient for their success in online learning environments. For instance, some studies have indicated that the dropout rate in online courses for employees in business organizations can be as high as

70% and that students' motivation is the main factor that contributes to the completion of online courses [20].

An investigation of the factors that influence the success of participants in online courses can improve the understanding of their needs and provide insight into the characteristics of effective and stimulating online learning environments. It must be emphasized that students' dissatisfaction with e-learning may be one of the reasons for their decision to drop out from online courses [17].

In one study [18] 23 factors that influence the success of participants in online courses were identified and grouped into the following 6 categories: initiative/motivation, competence, time, technology literacy, personal factors (family support, health), instructional environment. According to the results of this study, the most important factors that influence students' success in online courses were active involvement in the course and effective time management, as well as their initiative and motivation (including their commitment and interest in the course). However, the category of competence included most diverse factors: understanding of the written course material, writing skills, communication skills, awareness of the expectations and workload in the online learning environment, organizational skills, orientation to details, critical thinking, etc.

Participants in online learning have different learning styles and, while attending various online courses, develop their online learning skills as well as

set goals, make decisions regarding course content and ways of learning, solve problems, raise questions, etc. [28]. In online education it is important to find the answer to *how* the students learn something [22]. Namely, the studies have shown that not all attendants of online courses learn in the same way.

Learning styles are another element that affects the success in online education. David Kolb [14] defined four learning models and four styles of learning (see Fig. 1.). The learning models are related to: (1) learning by feeling – *concrete experience*; (2) learning by reflection while watching/listening – *reflective observation*; (3) learning by thinking – *abstract conceptualization*; learning by doing – *active experimentation*. Kolb's 4 learning styles can be used to categorize participants in e-learning courses: *theorists* (assimilating style) prefer abstract conceptualization and reflective observation; *pragmatists* (converging style) like learning by abstract conceptualization and active experimentation; *activists* (accommodating style) prefer concrete experience and active experimentation; *reflectors* (diverging style) prefer reflective observation and concrete experience. An online educational environment can deal with individual differences in learning styles by offering different learning activities to match their learning style.

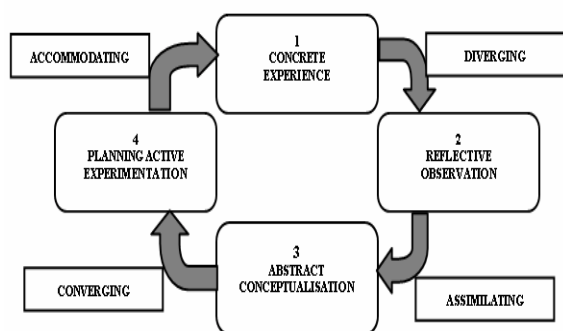


Fig. 1. The Kolb Cycle with four learning styles [14]

However, apart from learning styles, learning strategies and motivation have an important impact on students' performance [24]. Learning strategies are related to activities like reading out loud, taking notes, consulting other participants in learning, etc. There are two basic types of learning strategies which can be identified as deep learning and surface learning [9]. The deep learning strategy involves understanding the meaning of a task and continuous involvement in activities like taking detailed notes and doing exercises. On the other hand, the surface learning strategy is related to memorizing information to meet examination requirements without making an effort to

fully understand and master a given subject of the course.

## 2 Motivational elements influencing success in e-learning

It must be noted that there is a cause and effect relationship between the success and motivation of participants in online learning because achievement motivates students to make an effort in future online learning. Motivation is essential in all educational environments, and especially for attendants in physically isolated online surroundings [18].

Being physically separated from their tutors, online-course attendants find themselves in a situation they are not used to during traditional classroom-orientated education. Students, for example, might need the services of the library, which is not available to the ones who are not in its vicinity, which is a limitation of the learning environment that can lead to the decrease in the motivation level. Also, facing a novel experience, such as an online course, can make students feel uncomfortable, confused, nervous and anxious, making the efforts to motivate students crucial for preventing the negative effects of such feelings [16].

Motivation has a great influence on the success of participants in online courses. Motivational factors in e-learning can be divided into 2 categories [8]: *intrinsic* (internal) and *extrinsic* (external). Extrinsic motivation is related to the reaction to reward or punishment, like the effects of evaluation of knowledge, getting grades or marks, increase/decrease in the rewards or grades, receiving a certificate, etc. Intrinsic motivation is associated with the desire to learn and acquire new knowledge while being involved in the learning process [7]. A student's intrinsic motivation can also be influenced by attractive design and content of the online course, the ability to interact with other participants, as well as with the tutor and the content, and by the potential for personal improvement. Such aspects of the online learning environment could be the reason for its potential to intrinsically motivate students (see: [29]).

It is common that attendants cannot keep the same level of motivation throughout the course. Some join the course highly motivated but after some time there is a decrease in motivation [32]. Keller [13] noticed that problems with motivation occur when students are engaged in individual work. They do not find this kind of work interesting enough and lose focus.

For this reason, the content of online courses should be presented in an appealing way to motivate the students and to attract their attention to course content and activities. The amount of importance the students give to instructions depend on their personal background and interest, therefore their previous knowledge should be taken into account. Students

develop self-confidence when they have experience in e-learning and know what is expected of them. The motivation to continue their efforts in online learning can be stable or can even increase when the process of learning is interesting and enticing [15].

Butler [2] suggests the following elements that can help in maintaining the same motivation level throughout the course:

- the aim and purpose of learning have to be clearly stated;
- the process of learning has to be interesting, challenging and diverse;
- student has to feel comfortable while taking part in an online course;
- every contribution a student makes has to be taken into consideration and respected;
- possibility of interaction and socialization;
- adequate and well-timed support for students when dealing with problems;
- attendants have to enjoy the learning process.

Motivation and focus are important for predicting memorizing, persistence, and success of students, and therefore should be a part of their self-evaluation before enrolment in the online course [30]. To motivate the attendants during the learning process, Keller [13] suggests the ARCS model (Attention, Relevance, Confidence, Satisfaction).

Technology problems, inexperience of the course attendants, lack of feedback, and insufficient online communication, all have an impact on dropout from online courses [19]. The participants in online courses often state lack of time as the main reason for not engaging in an online course [31]. Therefore, effective time management during the course is of crucial importance. It may be opportune for students to perform a self-evaluation of time-management [6] and other self-management skills before their more intensive engagement in e-education.

In addition to a higher degree of motivation the success of online students also depends on their use of special learning strategies [24]. In general, every successful attendant of online courses should demonstrate self-motivation, basic computer skills and access to a computer and the Internet, good reading and writing skills, the ability to ask for assistance, eagerness to share experience with others, appropriate time management skills, absence of need for a face-to-face interaction with the tutor and other students, and a degree of curiosity.

Apart from the skills already mentioned, other factors play an important role. Those are: student's independence, lack of pre-knowledge, demographic and socioeconomic factors, field of study, teaching quality and student's indifference [5], as well as their family situation and job obligations. Some other important factors of success in online courses may be readiness for online communication with the tutor and fellow students, positive evaluation of the quality of the course, self-discipline for educational assignments, completion of one's obligations on time,

independence in defining one's study goals and self-initiative [18].

### 3 Problem and hypotheses

The main problem of this research was to identify the most influential motivational elements in e-learning, and also the basic factors of motivation at the individual level. It must be noted that in this research the motivation of novice e-learners was investigated, and not that of experienced users of e-learning courses. This was done because the use of e-learning by participants who had attended a number of online courses over a period of two or more years may have become a routine activity. In fact, motivating beginners in e-learning may be more important than stimulating those who have adopted this modality for knowledge acquisition.

It should also be emphasized that in this research a convenience sample was used and that the results of our research are at least partly influenced by the characteristics of specific online courses and student groups which attended these courses in a blended/hybrid learning environment. However, our study indicates the potential results arising from a much wider study conducted on a more representative sample of participants in online courses, and (b) tests the appropriateness of a specific methodology for investigating motivational factors in e-learning.

The two main hypotheses are related to our investigation into the structure of motivation for participation in e-learning courses:

*H1:* Exploratory factor analysis of variables related to highly evaluated sources of motivation for participation in e-learning can reveal some of the basic motivational factors related to novice e-learners.

*H2:* Two basic motivational factors (intrinsic/extrinsic) have equivalent influence on novice e-learners.

### 4 Method

A survey was designed as a component of course evaluation with 90 items related to various sources of motivation for use of e-learning courses by university students. In the first phase of survey design about 100 students were asked to write – on a piece of paper – what motivates them for use of online courses in the hybrid learning environment at their college. Also, a literature search of motivation factors for participation in e-learning was performed. The potential motivational variables that were collected in this way were used to create a list of 90 items for the survey. This survey was administered at the end of the semester on a convenience sample of 171 students who had started using e-learning courses and had experience with at least 3-4 online courses that were a

component of the hybrid learning environment at their college. The rating of each motivational element was performed on a Likert-type scale. The students were asked to state how much each element influences their motivation to work with the online course (possible responses were in the range from 5 – *very much*, to 1 – *very little / not at all*). The average ratings of motivational elements were subsequently calculated. Factor analysis was performed on 51 motivational variables with the highest average rating (3.56 or above). The results of data analyses are displayed in Table 1.

## 5 Results

The identification of some of the basic factors of motivation for participation in e-learning was a problem associated with the first hypothesis (H1) in our study. We decided to use principal component factor analysis of the 52 variables with the highest rating regarding the students' evaluation of their influence on motivation to use e-learning courses. The initial results revealed that 14 factors (which explained 66% of the variance) had eigenvalue of 1.0 or above. This number of factors was considered too large for further analysis and, based on the Scree test, factor structures with 3-5 factors were analyzed after Varimax rotation. The factor structure with 3 factors explained 37% of the variance and was found to be most interpretable. The results of factor analysis with Varimax rotation of the selected solution with 3 factors is displayed in Table 1.

Table 1. Motivational factors for the use of e-learning courses in a blended learning environment (N=171)

<b>Intrinsic (achievement) motivation &amp; feedback (F1)</b>	<b>F1</b>	<b>F2</b>	<b>F3</b>
More active ways of online learning in comparison to the demands of traditional education.	.68		
Online courses are a means for quality activities in knowledge acquisition.	.63		
Possibility to test my previously acquired knowledge in an online course.	.58		
I find e-learning to be desirable because it is our future.	.57		
Possibility to use the contents of the online course outside class.	.57		
Work with the online course which is without hurry, with pace/rhythm that suits me best.	.56		
Understandable content of the online course so that I don't have to ask the instructor for explanation.	.55		
Combining of teaching/learning in class with online lectures.	.55		
Adequate number of means for self-assessment (questionnaires, quizzes, tests).	.54		
My wish to generally become more competent in the thematic area of the online course.	.54		
It is less monotonous / boring in comparison to some traditional lectures.	.53		
Good and logical organization of the online course.	.53	.35	
The use of surveys which enable the participants	.53		

to comment the online course.			
Flash animations and other attractive multimedia elements in the course.	.52		
My wish to generally be better as a person on the basis of what I am doing.	.52		
Better and more complete mastering of course content.	.52		
By using the online course I will get an additional qualification for my future profession.	.52		
<There were 10 more predominant projections on F1>			

### **Extrinsic (utilitarian) motivation & ease-of-use (F2)**

	<b>F1</b>	<b>F2</b>	<b>F3</b>
Getting one or more extra points for a university course because of participation in e-learning.		.71	
Better marks for a university course with an e-learning component.		.64	
Adequate difficulty of questions and tasks in the course (neither too easy, nor too difficult).		.60	.33
Good access to the Internet from many locations (from home, at the college, etc.) for the participants.		.58	.42
Optimal duration of the online course (neither too long, nor too brief).		.58	
Registering of my regular class attendance when the online course is part of a hybrid college course.	.31	.56	
Good structure of course content (without unsystematic "notes" or loads of facts).	.33	.55	
Possibility to get a certificate after successful completion of the online course.	.38	.51	
Possibility to choose the online course which is most interesting to me personally.		.49	
Possibility for parallel search of the web for additional information.		.46	
Fast Internet connection for the use of the online course.	.41	.41	
The reward that I will get within the university course (praise, course points, good marks).		.34	

### **E-learning competency & self-efficacy beliefs (F3)**

	<b>F1</b>	<b>F2</b>	<b>F3</b>
The skills of critical thinking.			.71
Good skills and resourcefulness in online discussions.			.66
General self-management as a characteristic which contributes to work in an online course.	.33		.61
Setting one's personal goals for learning and focus on their attainment.	.37		.58
Good previous knowledge in the area of the online course.			.56
Good time management skills having in mind other responsibilities and activities.			.49
Realistic expectations regarding the results/effects of online learning.	.36		.48
Good reading and writing skills.			.47
Good learning strategies of course participants.	.30		.37
My superior technical knowledge regarding work with computers and the Internet.			.37
Resolution of practical problems that are a component of learning in the online environment.			.35
Positive attitude of participants toward online courses and that kind of learning.	.30		.35

*Note: Only projections of 0.30 or above are displayed in the table.*

The results of factor analysis presented in Table 1 indicate that three basic factors may account for numerous specific motivational elements related to participation in online courses. The first and largest

identified factor presented in Table 1 was labeled *Intrinsic (achievement) motivation and feedback (F1)*. The variables predominantly projecting on factor F1 that may be classified as indicators of intrinsic motivation were: “*More active ways of online learning in comparison to the demands of traditional education*”, “*Online courses are a means for quality activities in knowledge acquisition*”, “*I find e-learning to be desirable because it is our future*”, “*It is less monotonous / boring in comparison to some traditional lectures*”, “*Flash animations and other attractive multimedia elements in the course*”. Other variables that predominantly projected on factor F1 also indicate the need for personal achievement and interest in receiving feedback: “*My wish to generally become more competent in the thematic area of the online course*”, “*My wish to generally be better as a person on the basis of what I am doing*”, “*Better and more complete mastering of course content*”, “*By using the online course I will get an additional qualification for my future profession*”, “*Possibility to test my previously acquired knowledge in an online course*”, “*Adequate number of means for self-assessment (questionnaires, quizzes, tests)*”. It must be noted that there were ten more variables with predominant projection on factor F1 besides the motivational elements presented in Table 1 (they were not displayed because of space limitations).

As was noted before, learners’ motivation can be categorized as *extrinsic* (i.e. learning to pass a course) or *intrinsic* (i.e. not utilitarian) and, theoretically, a higher level of motivation is expected when intrinsic types of motivational factors are activated, for instance, toward activities that are personally interesting and freely chosen [12]. A second glance at the variables (motivational elements) in Table 1 associated with intrinsic motivation reveals that they could also be related to the *quality* of online courses. In other words, the results of our data analysis empirically indicate that quality attributes of online courses could positively affect the intrinsic motivation of learners (for comparison, see [29]).

The second identified factor presented in Table 1 was labeled *Extrinsic (utilitarian) motivation and ease-of-use (F2)*. The variables predominantly projecting on factor F2 that could be interpreted as indicators of extrinsic motivation were: “*Getting one or more extra points for a university course because of participation in e-learning*”, “*Better marks for a university course with an e-learning component*”, “*Registering of my regular class attendance when the online course is part of a hybrid college course*”, “*Possibility to get a certificate after successful completion of the online course*”, “*The reward that I will get within the university course (praise, course points, good marks)*”. While intrinsic motivation includes personal ambition and an interest in self-development, extrinsic motivation is associated with an orientation to achieve rewards and bonuses [11]. These two different types of motivational factors can

be effectively combined to create a more stimulating online learning environment. It must be noted that participants in online courses may have different learning styles and reasons for studying, and that even though in online instruction the use of intrinsic motivational elements may be preferred, the strategies that employ extrinsic motivational elements should also be considered.

The additional variables related to *ease-of-use* that predominantly projected on factor F2 were: “*Adequate difficulty of questions and tasks in the course (neither too easy, nor too difficult)*”, “*Good access to the Internet from many locations (from home, at the college, etc.) for the participants*”, “*Optimal duration of the online course (neither too long, nor too brief)*”, “*Good structure of course content (without unsystematic “notes” or loads of facts)*”, “*Possibility for parallel search of the web for additional information*”, “*Fast Internet connection for the use of the online course*”. As a well-known component of the *Technology Acceptance Theory* [3], ease-of-use has been associated with acceptance of e-learning [10]. Interestingly, in the results of the factor analysis presented in Table 1, ease-of-use is related to *extrinsic (utilitarian)* motivational elements.

The third factor presented in Table 1 was labeled *E-learning competency and self-efficacy beliefs (F3)*. The concept of self-efficacy was developed by Bandura [1] and is related to beliefs that one is capable of performing actions to attain a specific goal. Some of the variables that predominantly projected on this factor were: “*The skills of critical thinking*”, “*Good skills and resourcefulness in online discussions*”, “*General self-management as a characteristic which contributes to work in an online course*”, “*Setting one’s personal goals for learning and focus on their attainment*”, “*Good time management skills having in mind other responsibilities and activities*”, “*Good learning strategies of course participants*”, “*My superior technical knowledge regarding work with computers and the Internet*”, “*Resolution of practical problems that are a component of learning in the online environment*”, etc. Many of the previously listed variables are associated with the common factors of e-learning performance: self-efficacy regarding e-learning and ICT/Internet use; self-regulation in form of goal orientation, as well as management of time and learning environment (see [26]). It must be noted that e-learning is more effective if students have time management skills, discipline, and computer skills [25], as it was mentioned in the introduction of this paper, but the results of our factor analysis also indicate that such learner attributes may have an important effect on motivation for participation in online courses; therefore, when it comes to novice participants in e-learning, it is important to provide support in the development of their competencies in those areas.

To examine which of the three factors of motivation of novice e-learners has the greatest influence on their motivation for their use of e-learning courses in the blended/hybrid environment, ranking of motivational elements was performed based on the average estimation of how much each of the elements influences students' motivation. The results of this ranking are displayed in Table 2 together with the information on the predominant projection of each element on one of the factors revealed in Table 1.

Table 2. Ten most highly evaluated motivational elements for the use of online courses (N=171)

Rank / motivational element	Aver. rating	Factor
1 / Learning at a time I prefer most, with pauses/breaks whenever I wish for them.	4.36	1 ; 2*
2 / Better marks for a university course with an e-learning component.	4.10	2
3 / Getting one or more extra points for a university course because of participation in e-learning.	4.09	2
4 / The possibility to learn course content from my home.	4.04	1 ; 2*
5 / The reward that I will get within the university course (praise, course points, good marks).	4.02	2
6 / Fast Internet connection for the use of the online course.	4.01	1* ; 2
7 / Good access to the Internet from many locations (from home, at the college, etc.) for the participants.	4.01	2
8 / Registering of my regular class attendance when the online course is part of a hybrid college course.	3.94	2
9 / Possibility to choose the online course which is most interesting to me personally.	3.92	2
10 / Possibility for parallel search of the web for additional information.	3.88	2

\* The projection on a factor that was less than 0.1 smaller than the projection on the other factor.

As can be observed from the data presented in Table 2, almost all of the ten most highly evaluated motivational elements were related either to extrinsic rewards (those ranked 2<sup>nd</sup>, 3<sup>rd</sup>, and 5<sup>th</sup>) or to convenience/ease-of-use (those ranked 1<sup>st</sup>, 4<sup>th</sup>, 6<sup>th</sup>, 7<sup>th</sup>, and 10<sup>th</sup>). Only three motivational elements/variables from the “top-ten” had an almost equal or a predominant projection on factor F1 in Table 1 labeled *Intrinsic (achievement) motivation & feedback*. This could imply that for novice e-learners, who are not yet fully accustomed to the virtual learning environment, the stimulation related to extrinsic motivation and ease-of-use/convenience may have greater motivational effect than means for stimulating intrinsic motivation. Of course, this should be further tested on other subjects with a different e-learning environment. Also, more subjects should be included in further research and the number

of variables for factor analysis should not be reduced to 52 as was done in our study.

## 6 Conclusion

The extent to which a student is motivated may influence whether he/she is more engaged in “surface” or “deep” learning [23, 80]. It can be hypothesized that e-learning will be more effective if it motivates students for “deep” learning and includes more *intrinsic* motivational elements in online course design. However, for some e-learners, extrinsic motivational elements may be equally or even more important.

This paper analyzes factors of motivational elements for engagement in e-learning courses. As a result of our analyses a three-factor structure of motivation for use of online courses in blended learning environments was revealed and the first hypothesis (*H1*) confirmed. The revealed factors (see Table 1) were related to *intrinsic* motivational elements (F1), *extrinsic* motivational elements (F2), and e-learning *competency* or *self-efficacy* related elements (F3). However, it must be noted that the first two factors were also related to indicators of the quality of course design (F1) and ease-of-use/convenience of e-learning (F2).

To test the second hypothesis (*H2*) factor projections and semantic content of the “top-ten” motivational elements for engagement in online courses were inspected. It was found that, for the subjects in our research, i.e., novice e-learners, most highly evaluated motivational elements were predominantly related to extrinsic motivation and ease-of-use.

The results of our study may have implications on course design in e-learning, evaluation of usability of e-learning courses, techniques for motivating online learners, and the policy of institutions that provide e-learning courses.

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