EVALUATING THE IMPACT OF SOCIO-ECONOMIC AND DEMOGRAPHIC FACTORS ON SELECTED ASPECTS OF E-LEARNING IN PUBLIC ADMINISTRATION EDUCATION

Aleksander Aristovnik, Damijana Keržič, Nina Tomaževič, Lan Umek
University of Ljubljana
Slovenia

Abstract
Nowadays blended learning is very popular in higher education. Enrolled in e-courses, students form opinions on different aspects of e-learning. In our study, we focused on assessing such aspects from the students’ perspective and explored differences between subgroups, based on socio-demographic characteristics of students in public administration programmes. The empirical results show that students’ attitudes to blended learning increase significantly by year of study and decrease according to the amount of other activities. In addition, the results indicate that the main challenge of the faculty management and teachers is to increase the engagement of first-year students regarding the work in e-courses.

Introduction
The growth of information and communication technology (ICT) is bringing rapid and significant changes to the development of teaching and learning techniques. E-learning is emerging as the new paradigm of modern education (Sun, Tsai, Finger, Chen, & Yeh, 2008). The rise in the usage of e-learning in the last two decades is due to the tougher competition between higher education institutions to attract students and meet their educational needs and goals (Clark & Meyer, 2011) and to support both face-to-face and remote course delivery without the constraints of time and distance (Park, 2009).

Despite the popularity of online education, attrition remains a problem faced by many institutions (Hart, 2012; Saba, 2012; Upadhyaya & Mallik, 2013). The effectiveness of e-learning systems (Hart, 2012; Hassanzadeh, Kanaani, & Elahi, 2012; Islam, Rahim, Liang, & Mottaz, 2011; Mbarek & Zaddem, 2013) and students’ perceived satisfaction (Al-Adwan, Al-Adwan, & Smedley, 2013; Joo, Joung, & Son, 2014; Kassab, Al-Shafei, Salem, & Otoom, 2015; Liaw, 2007; Lim, Ayesh, & Chee, 2013; Ozkan & Koseler, 2009; Sun et al., 2008) have been important subjects of research in the last few decades. Many factors influence the effectiveness of e-learning, with some being connected with technology/technics and others with people. Upadhyaya and Mallik (2013) claim that e-learning involves interaction between people and processes, meaning that it has to be treated as a socio-technical system rather than a social system only considering the people aspect (e.g., students, teachers and other stakeholders) or a technical system only considering the standards and processes aspect (e.g., course content, technology, Learning Management System (LMS), content management tools). E-learning is a complex process that depends not only on these aspects in isolation, but also the interaction among them. A successful e-learning system must at least be designed with good and adequate program content, which is presented well and can be accessed easily, and allows high user participation and involvement in the virtual learning environment (Lim et al., 2013). A web-based learning system is considered to be successful if it can replicate classroom experience and consider the students’ needs (Sanchez-Franco, 2010). If students refuse to use the system, its benefits will not be fully exploited.
(Tarhini, Hone, & Liu, 2013). Additionally, although the Internet may be considered a global technology, the efficiency of e-learning tools should be measured locally as users typically work in local/national contexts (Teo, 2011).

Besides understanding the students’ psychological aspects of learning in blended learning, it is very important to monitor and understand how students themselves perceive different aspects of e-courses and how they feel when using teaching materials and learning in an e-course. As the latter is designed by a teacher, this kind of assessment could be understood as a student evaluation of teaching (SET). SET is important for two primary reasons. First, student evaluation provides data used for managerial decisions such as tenure, promotion, and salary increases. Second, teaching evaluations provide feedback to help teachers improve their future teaching performance (Loveland, 2007; Sheehan & DuPrey, 1999).

The rapid growth in the number of online classes poses some challenges for academic management. They include difficulties hiring teachers with online teaching interests and experience, increased costs associated with technology, training and faculty incentives, and problems associated with the comparison of traditional and online teaching in terms of workload, compensation and evaluation (Loveland, 2007). In any case, teachers should themselves be interested in the feedback from students – in order to improve the e-courses and students’ engagement within them.

When students are provided with the same LMS and learn in the same e-courses, not everyone has the same perception of a specific aspect of work in the e-course and a general impression about it. It is therefore important to understand that variations between genders, location of students’ homes, years of study, occupation with other activities, participation in different programmes and students’ high school backgrounds exist and should not be ignored when developing e-courses. Lim et al. (2013) offered similar reasoning where the focus was on students’ perceptions of LMS design and the socio-demographic factors, such as role, gender, experience and age, influencing those perceptions and by Wu and Liu (2013) in whose research there were differences in the satisfaction with blended learning between postgraduate and undergraduate students.

In our study, we analysed the students’ points of view on different aspects of the e-courses in which they were enrolled. We examined the results, received from students of two undergraduate programmes at the University of Ljubljana, Faculty of Public Administration, where LMS Moodle is used for e-learning, and linked them with the socio-demographic characteristics of the surveyed students. The latter were acquired from the student databases.

The purpose of the paper is to present the analysis of the socio-demographic factors influencing students’ assessment of aspects of each e-course. The paper explains which socio-demographic factors influence the students’ perceptions of e-courses and discusses the variances between the different subgroups of students.

The paper is structured as follows: after the introduction, which includes defining the problem, the purpose and structure of the paper as well as a brief literature review on different aspects of blended learning and factors affecting them, the results of an empirical study are presented. At the end, conclusions are offered based on the
examined data. They are accompanied by the limitations of the presented study and the plans for our future research.

**Empirical Study**

In our study, we analysed how the assessment of different aspects of an e-course varies between assorted subgroups of students. For this reason, we developed a questionnaire and asked students to participate in the e-survey. In this section, we describe the methodology we used and the empirical findings.

**Data and Methodology**

The research was conducted among students from the University of Ljubljana, Faculty of Public Administration. We limited our survey to obligatory e-courses for undergraduate students, where blended learning is mandatory. Each student evaluated e-courses, in which they were enrolled in one semester of an academic year. Blended learning at the faculty is implemented with LMS Moodle (Umek, Aristovnik, Tomaževič, & Keržič, 2015).

Our survey was participated in by 315 students, with each student evaluating 3 to 5 different e-courses. Altogether we recorded 1,456 e-course evaluations (data instances). Due to missing values, we removed 373 instances from our initial data set and reduced the sample size to 1,083. Each instance in the final data set represents a student evaluating one e-course (see Table 1).

Table 1

*Statements from the Questionnaire Survey*

<table>
<thead>
<tr>
<th>Abb</th>
<th>Statement about e-course</th>
</tr>
</thead>
<tbody>
<tr>
<td>EC1</td>
<td>The virtual classroom of the course is organized transparently.</td>
</tr>
<tr>
<td>EC2</td>
<td>The goals (workload demands, grading) of this e-course were clearly stated at the beginning of the semester.</td>
</tr>
<tr>
<td>EC3</td>
<td>This e-course offers a variety of ways of assessing my learning (quizzes, written work, forums, files, …)</td>
</tr>
<tr>
<td>EC4</td>
<td>I receive the teacher's comment/feedback on an assignment in less than 7 days.</td>
</tr>
<tr>
<td>EC5</td>
<td>I prefer fewer lectures in the traditional way (face-to-face) and more learning material processed in the e-course.</td>
</tr>
<tr>
<td>EC6</td>
<td>More course exercises could be carried out in the e-course instead of in the classroom.</td>
</tr>
<tr>
<td>GI1</td>
<td>The general impression of the e-course is good.</td>
</tr>
<tr>
<td>GI2</td>
<td>Study material and tasks of the e-course are presented in a clear and understandable way.</td>
</tr>
<tr>
<td>GI3</td>
<td>Finding certain activities in the e-course is simple.</td>
</tr>
<tr>
<td>GI4</td>
<td>The prepared learning material and tasks are consistent with the lectures in the classroom and supplement them.</td>
</tr>
<tr>
<td>GI5</td>
<td>The prepared material and assignments supplement the tutorial in the classroom.</td>
</tr>
<tr>
<td>GI6</td>
<td>Learning materials and activities in the e-course helped me to effectively study this subject matter.</td>
</tr>
<tr>
<td>GI7</td>
<td>The teacher gives me feedback/a response on my submissions (assignment, forum posts).</td>
</tr>
</tbody>
</table>


The questionnaire consisted of 13 statements describing the virtual classroom of the corresponding course: aspects of the e-course (EC) and the general impression (GI).
Students evaluated the e-courses in which they were enrolled. The questionnaire consisted of two parts: an evaluation of each e-course (statements EC1–EC6) and students’ personal impressions about an e-course (statements GI1–GI7). Students expressed their opinions regarding the statements on a seven-point scale from “totally disagree” (value 1) to “totally agree” (value 7), with an additional possibility “I do not want to answer/no experience.”

After receiving the answers from the survey, we upgraded the analysis with data on the students’ socio-demographic characteristics, obtained from the students’ information database maintained by the faculty, namely gender, high school final grade, region of Slovenia where the students live, year of study, and study programme. In the survey itself we also asked them whether they are occupied with any other activities besides their study. In the paper, we treat the socio-demographic variables as factors, which determine different subgroups.

The main goal of the study was to compare how the means of the variables, i.e., EC1–GI7, vary between the subgroups of students. For each variable from Table 1 and for each socio-demographic factor we tested whether the means differ significantly among the subgroups defined by the factor. We computed p-values using a t-test (for factors with two distinct values, such as gender) or an analysis of variance ANOVA (for factors with several values, such as year of study: first, second, third). Since we tested 78 hypotheses (13 statements * 6 factors), we adjusted the p-values using a Bonferroni correction.

**Empirical Results**

Table 2 presents the computed p-values for each pair of a socio-demographic factors and a statement from the questionnaire (EC1–GI7). For clarity, we do not show the original p-values. Moreover, we do not report the mean values for the subgroups since several factors have many possible values. The content in the cells indicates the magnitude of the p-value, classified into three categories presented with a different number of stars.

**Table 2**

*Significant Differences Between the Subgroups*

<table>
<thead>
<tr>
<th>Statement</th>
<th>EC1</th>
<th>EC2</th>
<th>EC3</th>
<th>EC4</th>
<th>EC5</th>
<th>EC6</th>
<th>GI1</th>
<th>GI2</th>
<th>GI3</th>
<th>GI4</th>
<th>GI5</th>
<th>GI6</th>
<th>GI7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>**</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High school final grade</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>**</td>
<td>**</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Region</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>**</td>
<td>**</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other activities</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>**</td>
<td>**</td>
<td>**</td>
<td>**</td>
</tr>
<tr>
<td>Year of study</td>
<td>**</td>
<td>**</td>
<td>**</td>
<td>**</td>
<td>**</td>
<td>**</td>
<td>**</td>
<td>**</td>
<td>**</td>
<td>**</td>
<td>**</td>
<td>**</td>
<td>**</td>
</tr>
<tr>
<td>Study programme</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>**</td>
<td>**</td>
<td>**</td>
</tr>
</tbody>
</table>

Legend:

- Empty cell: Bonferroni adjusted $\alpha > 0.1$
- $*$: $0.05 < \alpha \leq 0.1$
- $**$: $0.01 < \alpha \leq 0.05$

The results in Table 2 indicate there is just one aspect of blended learning where male and female students differ significantly. It is the aspect GI3 (“simplicity of finding certain activities in the e-course”). Female students evaluated it on average with 4.55 (on a seven-point scale), which is significantly more than 4.04 for their male university colleagues. On the other hand, we found no significant differences for the factor “high school final grade.” This means that the students’ background does not play an important role when assessing aspects of blended learning.

Our study revealed two aspects, namely EC6 and GI1 (e-courses instead of a face-to-face tutorial and the general impression), with significant differences between the regions of Slovenia in which students live. The results showed that students who live further away from the university campus evaluated aspects EC6 and GI1 significantly higher compared to students from the Ljubljana region (where the faculty is located). This fact is not a surprise since it can be expected that those who live far away prefer to complete their duties in the e-course rather than having to commute to the faculty.

The assessment of aspects GI3 and GI4 (reflecting the general impression and the supplemental aspect of face-to-face lectures) differs significantly between the groups of students with different time spent for other activities besides their study (students’ work, sports training, etc.). The results of our study showed that the assessed general impression on average decreases with time spent on other activities – from 6.39 for students with no activities to 5.67 for students with more than 6 hours of other activities per day. We found a similar decrease for supplementing face-to-face lectures (a drop from 6.28 to 5.71).

The factor “year of study” is associated with the most significant findings. We found significant differences in 10 out of 13 aspects analysed. In all cases, students in the first year of study gave on average the lowest scores to each aspect while in the third year the scores were the highest. The aspect with the lowest p-value (4.9E-12) is EC1 (structure of the e-course) where the mean value rose from 5.52 (first year) to 6.02 (second year) to 6.17 (third year). This means that from the students’ perspective, the e-courses in higher years of study are better organized and structured.

The last row in Table 2 indicates four aspects EC3 and GI1 (for adjusted $\alpha < 0.1$), GI4 and GI5 (variety of different contents, the general impression, supplement to lectures and tutorials) with significant differences between students of the professional study programme (PS) and the university programme (UN). In all cases, the mean value was higher for the PS students.

Looking at the results from a different perspective, we found two aspects with no significant differences in the assessment by various subgroups of students. These aspects are EC4 (teachers’ feedback) and EC5 (preference for e-courses over face-to-face lectures). If we ignored the most influential factor (year of study), we could treat aspects EC1, EC2, GI2, GI6 and GI7 as non-significant.

**Conclusion**

The main goal of the paper was to present an analysis of the factors influencing the assessment of various aspects of blended learning. We examined the results, received from students of University of Ljubljana, Faculty of Public Administration, where LMS
Moodle is used for e-learning. The paper’s primary contribution was to identify differences in the assessment of the aspects between various subgroups of students.

Our study revealed that students’ attitudes to blended learning significantly increases with the year of study and decreases by the amount of other activities (e.g., students’ work, sports - training). We found some other specific significant differences. Female students find certain activities in an e-course easier than their male university colleagues. Students who live further away from the university centre evaluated e-courses higher than students from the Ljubljana region. Their opinions also differ regarding the impression of an e-course. We found that a variety of different contents, the general impression, being supplemental to lectures and tutorials are higher for students of the professional study programme than those in the university programme. Although our study revealed several interesting subgroups, we failed to find any significant differences between subgroups of students based on their high school final grade.

In this study, we focused on students’ perspectives of blended learning, while the teachers’ perspectives were ignored (Boling, Hough, Krinsky, Saleem, & Stevens, 2012; Friesen, 2012). To overcome this limitation, we plan to develop a new survey. We will ask teachers about their views on blended learning (time spent on preparation of an e-course, time spent in the e-course, communication with students, preferences -- e-courses vs. face-to-face courses -- etc.). After receiving such data, we will compare the results of the presented study with the results of our new survey. Moreover, one of our recent studies showed a significant increase in students’ performance in the period in which Moodle LMS was introduced. Therefore, in our future research we plan to acquire the data on student’s performance and identify how selected aspects relate to a better performance.

References


Author Details
Aleksander Aristovnik
aleksander.aristovnik@fu.uni-lj.si
Damijana Keržič
damijana.kerzic@fu.uni-lj.si
Nina Tomaževič
nina.tomazевич@fu.uni-lj.si
Lan Umek
lan.umek@fu.uni-lj.si