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TEACHERS' AND STUDENTS' PERCEPTION OF SLE: A PRE-TEST FOR A DIGITALIZED UNIVERSITY

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Abstract

Digitalization is an European Union Plan, which turns into reality in June 2022 for Romanian universities via the funds transmitted through NRRPs according to the degree of trust achieved by each university. For universities, digitalization is now a one-way street, which will be covered faster or slower depending on the financial possibilities obtained by each institution. The paper examines the perception of a smart learning environment of ten managers and professors from the University of Pitesti. Their opinions were extracted from ten semi-structured interviews. The perceptions of the faculty members were collected using questionnaires distributed directly or online. The final observations are that after this intense period of technology use (starting March 2020) teachers, managers and students admit the advantages of Smart Learning Environments (SLE) and are excited to be able to carry out activities that are more effective for final assessments. The Moodle platform used so far does not have built-in spyware and objective assessment has been one of the major challenges for the online exam session. Even though the advantages outweigh the disadvantages, opinions inhibiting the use of Smart Learning Environments, which can also be observed, are not statistically significant. The findings of the study led to further observations on the need for technological development, customization of the digital environment for learners and teachers and adaptation of pedagogical methods for the new smart environment. All of these lead to a direct effect on the quality of the teaching-learning process, economic growth and development of a country.

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1. Introduction

Among the most important pillars for economic growth, education is at the forefront of a country's policy attention. It is known that there have always been concerns about improving teaching, learning and assessment methods with the help of technology. The unanimous goal of achieving learning performance in schools, colleges, universities and corporations at low cost has led to the implementation of advanced technology. All smart tools (phones, LCDs, watches etc.) have gained ground in everyday life and are easily integrated into all human activities without restrictions.

Smart Learning Environments (SLE) emerge after a long journey of online-learning, computer-assisted learning, e-learning, digital learning etc. which have led to a process of acquiring information in a more pleasant and faster way. The roots of education with the help of technology can be found as early as 1986 when the International Stanford Colloquium took place, where the emphasis was on training citizens to live and progress in a computerized society, followed by other important events (Unesco International Congress - 1989, European Seminar on the development of technologies -1991 etc.).

2. Problem Statement

In current research, the focus is on smart learning environments, which means efficient time management, use of state-of-the-art technology, and connecting with like-minded communities. The road to Smart Learning Environment has also been taken by adaptive learning, artificial intelligence, instructional design, open educational resources, XR technologies, virtual learning environments, augmented reality, leading to smart classrooms, smart universities, smart cities. These smart technologies offer all kinds of opportunities within them, for example to personalize their image, screen displays, record opinions, manage the time left for a test (Kucirkova et al., 2021). According to researchers in the field of SLE there is no standard, fixed definition for smart learning environments, perhaps also because technology is advancing incrementally and it would be impossible to fix an environment that depends on new technologies. So, as A. Singh (2022) also claims, only University Education System that contains smart stakeholders, smart technology and smart pedagogy can fit into Smart Learning Environments.

SLE assumes that it has the ability to provide personalized learning support, tracks learners' status, adapts to their needs, locates, recognizes contacts and provides platforms that are helpful in the learning process. Technology that continually develops the SLE environment is a driving force towards more effective, personalized, learner-centered teaching-learning practices. According to Cheung et al. (2021) smart learning environments, through artificial intelligence technologies - which includes internet, video recording technology, gesture recognition technology, user web activity tracking technology - can collect information about frequency of responding to lecture by raising hand, negative actions of looking into another peer's sheet (in case of an exam), mood and visible intentions during lecture. We can conclude, as Rob Koper said, that "an SLE is context-aware and adoptive to the individual learner's behavior" (Koper, 2014, p. 6) and "so, from this perspective smart learning environments could be seen as learning environments that are considerably improved to promote better and faster learning" (Koper, 2014, p. 4). According to Hwang (2014) "smart learning is a new concept of technology-enhanced learning. It is more

than integrating the criteria and functions of intelligent tutoring systems and context-aware ubiquitous learning systems" (p. 10).

SLE can perform some useful activities in intelligent learning, namely it can personalize content and future interactions with platforms and people from related fields, recognize learning styles, select materials that have common properties (e.g. can be opened with a certain program, sent by certain people, etc.), stimulate learning and lead to effective self-assessment.

In order to have a more rigorous view of this concept one can mention, according to Agbo et al. (2021), that most of the research appearing on internationally recognized platforms about SLE is in the USA thanks to author A. C. Graesser, the Netherlands represented by Menno D.T. de Jong, Japan through H. Ogata, China by means of R. Huang and G.J. Hwang. According to Google scholar other hierarchies can be identified, namely Italy by means of V. Rossano, Sweden via S.S. Oyelere, China through X. Zhai, Spain represented by S. Serrano Iglesias.

3. Research Question

So, even before equipping the learning environment, in order to help the actors involved in learning, several factors must be taken into account.

That is why the research focuses on the following questions:

- i. What should be the dominant features of an SLE?
- ii. What are the most important aspects of a SLE for managers and teachers?

Technology is advancing for both students and teachers and the learning environment is constantly changing. Along with the unstoppable evolution of technology, the actors involved in the teaching-learning process must be taken into account.

4. Purpose of the Study

The research aims to highlight the preferences and needs of users of the SLE environment that must be taken into account in order to achieve effective learning.

It is expected that the media must meet certain conditions that will predominate in the answers in the questionnaires. On the other hand, from the interviews, more details about SLE are obtained, as well as information related to the fear of using SLE.

5. Research Methods

Several researchers claim that:

In order to support the progressive development and refinement of smart learning environments, there should be ongoing evaluations. These evaluations include both formative and summative aspects. On the formative evaluation side, regular and systematic collection and analysis of student and instructor expectations, perceptions and reactions should be conducted (Spector, 2014, p. 10).

In order to have a well-balanced research paper, the study used a qualitative approach through semi-structured interviews conducted with several university managers and several FSESSP (Faculty of Educational Sciences, Social Sciences and Psychology, University of Pitesti) professors and a quantitative approach by collecting students' opinions using direct and online questionnaires.

For the answers obtained from teachers and managers, the standard mean deviation was calculated by calculating the classical average, the difference in results, the squaring, the average of these results and the square radical in the result.

The questionnaires measure, quantitatively and objectively, the results given by the learners. They were designed with simple, clear questions leading to a straight answer rather than an induced one.

6. Findings

Out of 540 questionnaires sent to the five branches of the faculty, 210 questionnaires were obtained with answers to all items. For validation of the questionnaire items Cronbach-Alpha coefficient values were calculated which ranged from 0.60 to 0.78.

The teachers' and managers' perceptions (ten interviews) of the SLE from the interviews are shown in the following figure no 1:

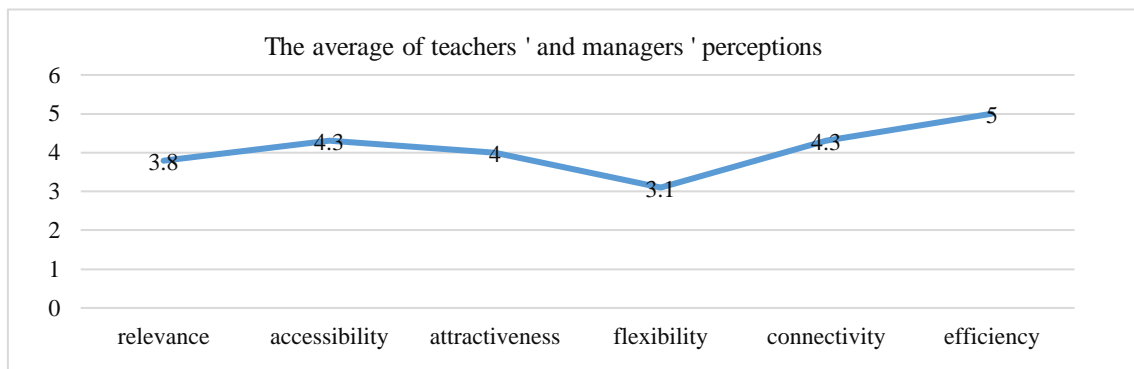


Figure 1. The teachers' and managers' perceptions of SLE

The student perceptions of the SLE are shown in the following figure no 2:

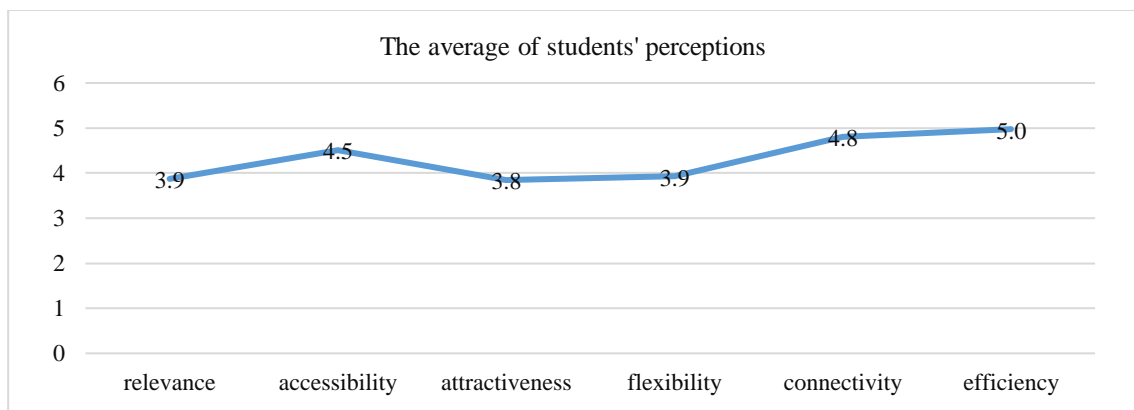


Figure 2. Perceptions of 210 students towards SLE

It is noted that most respondents considered the following relevant features: relevance (technology must be relevant to education), accessibility (can be easily accessed), attractiveness (challenges you to try new forms of learning), flexibility (adapts quickly to other programs, other students), connectivity (fast connection in a few steps), efficiency (low cost with high efficiency). It is observed (figure 1 and figure 2) that accessibility is the point that is common to the opinion of students and the opinion of teachers.

From the standard distribution (see Table 1) calculated from the teachers' and managers' opinions, we observe that SLE is beneficial, the advantages that emerged in their answers being efficient and relevant for learning.

Table 1. Standard deviation for teachers' and managers' perceptions of SLE

	STD DEV
relevance	0.918937
accessibility	1.159502
attractiveness	1.414214
flexibility	1.197219
connectivity	1.05935
efficiency	0.471405

Also, the students agree with the SLE environment (see Table 2), which can help them in the process of continuous learning, the advantages that emerged in their answers being efficient and relevant, like the teachers' answers.

Table 2. Standard deviation for students' perceptions of SLE

	STD DEV
relevance	1.006626
accessibility	1.101117
attractiveness	1.42625
flexibility	1.487
connectivity	1.15264
efficiency	0.532051

We notice that the SLE user level is a good one, accepted through efficiency and relevance by all learning actors (Figure 3) and we hope to move, with the new generations, to the level of SLE creation.

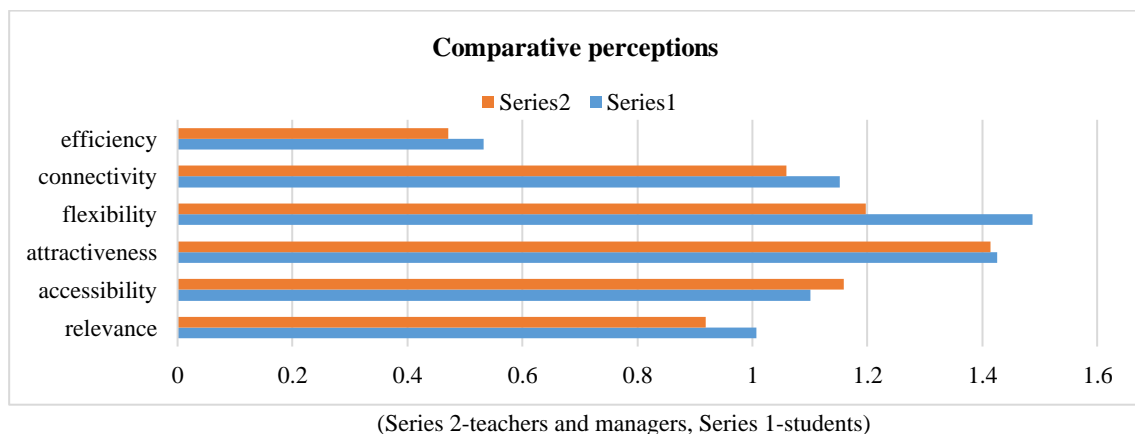


Figure 3. Comparative perceptions between students and teachers and managers

From the ten semi-structured interviews the following guiding positive opinions were obtained:

- i. The SLE environment can bring many advantages to the teaching-learning process;
- ii. the SLE environment can greatly help teachers in the continuous and final evaluation;
- iii. the SLE environment can achieve attendance situations and other activities that take up teaching time;
- iv. the SLE environment facilitates a hierarchy of activities during the semester, whether the learning was online, hybrid or onsite;
- v. the SLE environment can remind you of certain activities proposed and scheduled at certain times;

Out of the ten semi-structured interviews, several concerns emerged:

- i. that a graph of the time spent in the physical or online course can be generated;
- ii. that all activities are fully recorded and stored;
- iii. that there are no rules for hybrid learning;
- iv. that in hybrid learning, attention is overloaded and activities need to be modelled accordingly.

For the teachers and managers interviewed, accessibility is a very important feature, connectivity with other software to be able to generate reports relevant to the activities carried out and efficiency which is the ratio between the results achieved and the efforts undertaken.

It is preferable for technology to provoke learning, to guide it, to help self-assessment.

7. Conclusions

Accordingly, the responses of the digital generation students point to an acceptance of the SLE environment. They consider the advantages at the top of the list to be efficiency, connectivity and accessibility. Connectivity is felt by researchers as: "Connectivism: A learning theory for Digital Age" (Siemens, 2005) "Connectivism: A new learning theory?" (Verhagen, 2006) "Revisiting learning theory for e-learning" (Lowerison et al., 2008) and studied in connection with teaching with the help of new technologies.

Therefore, the use of innovative technology in universities is a natural way to meet the needs of students. The evolution of technology and the adaptation of teaching, learning and assessment methods in SLE will prove to be efficient and easy to integrate into daily activities. The use of recent technologies is a natural and useful evolution necessary for university education.

The advantages outweigh the disadvantages of such an environment, where discussions focus on the protection of personal data, personal images and even disclosure of location. Learners can therefore thrive in an SLE environment. They will be curious and encouraged to study in an environment with digital facilities that they are used to at a micro level and and certainly the European Union Plan (2021-2027) will help you a lot.

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