

Prospective Vision of the Implementation of E-learning Modules at the National Major University of San Marcos, Lima-Peru.

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Article History: Received: 10 November 2020; Revised 12 January 2021 Accepted: 27 January 2021; Published online: 5 April 2021

Abstract: The article analyzes the incorporation of applied learning modules for undergraduate students of the Universidad Nacional Mayor de San Marcos' Administration career to learn more efficiently and dynamically. The Methodology considers the evaluation and review of the criteria taken in a survey to carry out the E-learning Implementation modules. The objective is to determine the factors that influence virtual teaching by validating the students' ability to use a new teaching process to apply any educational topic through this platform. As a result, five factors that influence virtual teaching were determined, validating students' capacity and predisposition to acquire new knowledge through new learning methodologies using virtual media; using these E-learning modules is recommended in conjunction with the Flipped Classroom or B-Learning methodology. It was also determined that only 30% of the students who have taken several virtual courses within their curriculum feel comfortable with this methodology since it requires an entirely didactic and easy to handle system to teach the subject matter.

Keywords: E-learning, Flipped Classroom, Blended, Gamification, Cloud Computing, Motivation, Prospective vision

1. Introduction

This article shows us, through different investigations, why it should be important to provide undergraduate students of the Administration career of the Universidad Nacional Mayor de San Marcos with the necessary knowledge through an E-learning platform. The impact of E-learning preparation on satisfaction and motivation was also analyzed.

The lack of motivation for virtual learning is being reflected considerably. According to [1], "The lack of equipment, applications, failures in existing equipment, lack of skills, platform organization, the correct use of applications, lack of training, program versions, connectivity, interruptions in uploading and downloading files, file sizes, high demand on networks, among others; All the above framed in the types of the digital divide, affected the motivation of the student and generated states of helplessness that led to desertion, which is why we must fight it because it is essential to know it to interact with today's world that is changing day by day in its technological processes".

Today, due to COVID-19, we must face this problem since we are forced to carry our education virtually, thus, we seek to reach students through interactive tools that allow the cognitive and functional development of ICT in conjunction with the subject, so both the teacher and the student must be willing to face the change positively and vitally for a good academic performance.

A survey was conducted on Information Technology and E-learning methodology at the Universidad Nacional Mayor de San Marcos in the Administrative Sciences career, resulting in only 30% of the students being motivated concerning ICT.

During the COVID 19 crisis, all students have been forced to use ICT in their educational environment; due to this event, various ways of applying teaching by this means have been sought. Creativity is one of the most important factors in capturing the attention of the child or young student. Given that this juncture has been presented suddenly, the problem is that there is a lack of factors that influence the realization of adequate virtual teaching. After applying the survey to UNMSM Administration students, it was found that 30% of them are motivated to use E-learning modules.

The research objective is to determine the factors that influence E-learning teaching and establish the best educational methodology for its implementation as a learning strategy, not to be a determining problem for the future of virtual classes.

2. Background Concepts

2.1. Learning more about E-learning

“The technology can easily deliver more sensory data than the human nervous system can process.”. [2]

According to the author, cognitive systems are limited because various information is competing for this limited capacity. The learner must choose the one that best fits.

Also, he suggests supporting people to get more involved with e-learning, more so if one has the knowledge to do so.

If part of e-learning, the task is to design environments that create experiences that foster the desired change in learner behavior. Change is fostered according to individual experiences

Some benefits as mentioned by the author:

- Associated feedback.
- Combination of activities mixing collaborative activities with self-directed study.
- It adapts to the student's learning path.
- You can use simulations and games.
- The quality of teaching has the same level as it does not depend on a specific trainer. Beatrice (2014) mentions the skills developed by the training programs:

- Cognitive skills: Knowledge development, development, and understanding.
- Interpersonal skills: Active listening is involved.
- Psychomotor skills: Acquisition of perceptions and physical movements

An example given is when multimedia designers use a circle and color to catch the eye, as shown in the following image:

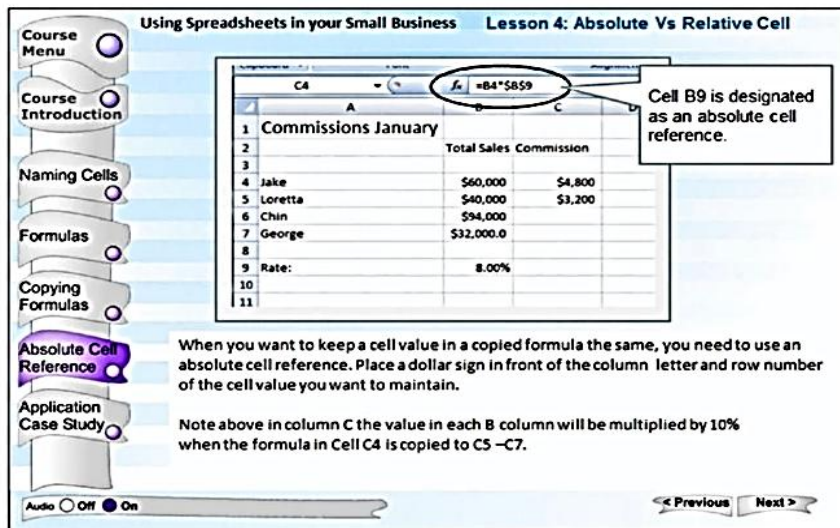


Figure 1. E-learning Design example. [2]

As [3]states that most of the courses are designed to develop cognitive skills. More interactive E-learning activities could be applied for thinking skills and the same practice through interactive games and feedback within the domain.

2.2. Blended Learning

The problem can be studied from 2 perspectives: The difficulties generated by the underlying model and the defects generated by a dominant economic factor in many projects. Underlying model: Reality. When looking at E-learning projects. [4]mentions that“it is a technology-enhanced distance learning program”.

E-learning has tried to apply a proven effective model for specific approaches, but it has some limits because not all the population is ready to do it.

Therefore, of the characteristics that have been shown, teacher tutoring is the most recent, and the following solutions are already being applied in important Spanish and Latin American institutions that apply E-learning:

- Low-cost tutors
- Work overload
- Heavy reliance on learning materials that do not require human intervention.
- The request of recognized authors for elaborating materials that have then been allowed to cite them as "teachers".
- Pedagogical design, which had already been forgotten because it was preoccupied with marketing operations.

All this has led to the emergence of the Blended learning concept as an answer to face institutions since not all people approve of E-learning at 100%.

“There are some concepts that require face-to-face lecture format. The optimal solution for this may be blended learning, a combination of online learning and classroom training. Blended learning includes face-to-face classroom practices that are combined with computer-mediated activities regarding content and delivery.”[5].

“E-learning has become an increasingly popular alternative to face-to-face training, especially because of the possibility of combining personal and professional life with it.”. [6]

2.3. Flipped classroom or reverse methodology.

In a Flipped classroom (FC) environment, the student can access learning content related to the new topics they will learn through lecture videos outside the classroom where they have face-to-face classes. Then, students work in the classroom to assimilate the new material they learned through cooperative learning activities, project work, and group discussions through videos[7][8]

This model aims to provide prior online access to content, learning materials and assist students in active and in-depth learning within the classroom.

However, to ensure the FC model's effectiveness, students must attend face-to-face classes with a certain level of knowledge.

On the other hand, the learner's E-learning readiness can ensure satisfaction and motivation in the FC model.

Students must complete specific online course requirements and come to class prepared.

According to the author, the Flipped Classroom, or Inverted Classroom (FC), "is a pedagogical approach in which activities that were normally done inside the classroom are done outside".

The main objective has been to evaluate a Flipped Classroom methodology on undergraduate students' academic performance in Social Work.

This methodology has demonstrated higher academic performance than traditional reading-based learning (BL) due to the development of different technological resources such as Google Drive, YouTube, Vimeo, Google Classroom, etc.

“It has been argued that future studies should have greater methodological rigor, a standardized FC format, and use assessment tools that evaluate the higher cognitive learning process rather than a test”. [9]

2.4. Information and Communication Technologies in Higher Education.

In [10] shows various opinions regarding the concept of "technology" such as, for instance, [11] and [12] made the distinction between conventional technologies (based on speech, drawing, painting), new technologies (audiovisual resources), and advanced technologies (such as computer software design or animation). The author also mentions [13], who refers to 3 fields: telecommunications, computer science, image, and sound technologies. He also includes [14][15], who said that "information technologies are composed of any computer-based tool that people use to work with information, support information and process information needs".

Within this process, ICTs become more important and essential for the development of organizational flexibility in education. [16] mention that the ICT tools that companies have been incorporating to optimize processes, especially those related to documentary procedures, is the use of digital signatures. [17] affirm that proximity marketing with beacon devices is a growing strategy to reach customers adequately. [18] mention the

main contributions to adopt technologies [19] mention that ICTs support business information integration to facilitate decision-making.

“They have also been involved in all fields of education, facilitating the transformation and optimization of most of the administrative processes, development of methodologies and access to a new group of higher education people.”. [10][20][21]

According to [9], the benefits of ICT inclusion are:

- The ease of access to information and the variety of information available.
- The reliability and speed of data processing.
- The feed-back possibilities they offer, their great interactivity.
- The development of flexible spaces for learning.
- The empowerment of personal autonomy and the development of collaborative work.
- Optimization of the organization and development of teaching and research activities.
- The streamlining of management activities.

Measures that should be developed around the following aspects, according to the author:

- Training, technical, and pedagogical training of teachers.
- Motivation and recognition.
- Investment

2.5. Educational services using Cloud Computing technologies.

The Cloud Computing paradigm is evolving and is mature enough to be used in the academic university environment.

Cloud Computing is a model for enabling convenient, on-demand network access to a shared pool of configurable computing resources (networks, servers, storage, applications, and services) that can be rapidly provisioned and withdrawn with minimal management effort interaction with the service provider.[22]

Table1. Implementation Components.

Services Models
Software as aService
Platform as aService
Infrastructureas aService
Architectures
Infrastructure
Platform
Application
Deployment Models
Private Cloud
Cooperative Cloud
Public Cloud
Hybrid Cloud

2.6. ¿How to improve quality, motivation, and student engagement in virtual education?

“Online education is an optimal tool for the familiarization with technological environments and the development of skills autonomously and progressively. However, when blended and e-learning educational initiatives are carried out, they present a progressive demotivation of the students, ergo disinterest and lack of real commitment to the project”. [23]

Therefore, because of their educational benefits and their social usefulness and level of impact, hybrid or virtual training proposals must be of the highest quality.

The author introduces game-based learning techniques concerning the level of learner engagement with the aim of:

- Identify modifiable elements within the online training process.
- Determine the motivational factors to be reinforced.
- Clarify proposals that promote e-learning.

As [23] mention that “It is important to include multimedia designs in virtual learning environments since they form a space for interaction between the teacher and the student, and at the same time, they allow the placement of digital and didactic materials in a previous design, which establishes learning activities that help students to achieve the proposed objectives. They also create spaces for discussion and work in research groups, and virtual communities and learning networks can be implemented around topics of common interest”.

Another way to motivate the student is through Gamification; taking advantage of virtual tools, it is possible to include playful elements in the educational context under the E-learning modality.

“Although there is no single conceptualization of gamification in the educational sector, all of them present students with an experience that tends to be immersive, changing the principles of traditional education to new learning parameters, based on motivation and social identification, applying game mechanisms to make the pedagogical process more attractive and, ultimately, effective”. [24]

2.7. E-learning in the faceof the COVID 19 pandemic

At the University of Botswanain India,[25]mentioned that they had to opt for the Moodle and Blackboard Learn (BBL) due to the pandemic tools, each with different advantages and disadvantages. Moodle may be less expensive than BBL, as BBL has interactive learning enhancements such as blogs, forums, and emails, whereas Moodle uses a business model and social constructivist approach, hence the low cost, which is why many higher institutions are making the transition to Moodle in all their faculties and departments.

It is becoming challenging to preserve education standards due to the limitations of finances, infrastructure, and other resources, including qualified and experienced human power. Learning provided through information technology (IT), to some extent, ensures high quality learning by providing the required information at a convenient place and at the right time. It is observed that E-learning emphasizes quality and effective presentation of information.[26].

Likewise,[27]surveyed students from various schools and universities in India, thus validating that E-learning provides rapid growth proving to be the best in all sectors, especially in Education during this blockade considering that the use of desktop, laptop or smartphones, and the internet, form an important component of this learning methodology.

The following is the authors' analysis:

Table2. Student's disposition towards E-learning. [26].

Classificati on	Responde nts	Percentage
Yes	144	82,29
No	9	5,14
Perhaps	22	12,57
Total	175	100

“More efforts are needed from the government and educational institutions to improve distance education. Investing in E-learning infrastructure, supporting students and teachers with necessary materials, workshops and training are important to increase their knowledge to adopt online learning. Facilitating the software and hardware of E-learning infrastructure is the main factor for the success of the educational process”. [28]

However, for[29],“virtual education is not applicable to develop the expected learning in the national university community, because high-end internet for provincial students is still one of the challenges that will have to be solved by the educational agents: governments, universities, students, professors, and civil society.”.

3. Methodology

The present research seeks to know the incidence of the variables "Motivation for ICT" and "Utility of ICT to implement E-learning Modules", therefore, according to the type of research, the present one is "correlational", since it measures the degree of association between two variables, as it appears in the present research. The correlation will help us determine the feasibility of implementing E-learning modules to strengthen teaching.

3.1 Unit of analysis

It is made up of students of the Administration career at UNMSM, to whom a survey was applied to identify the importance of ICT for applying E-learning teaching methods.

3.2 Population and Sample

The population will be the students that make up the Administration career of the UNMSM. Students from the 3rd cycle to the 10th cycle have been considered for the sample since from that year onwards they take courses related to IT. To check the number of students, we have used the average number of vacancies in the admission exam (200) with a dropout rate per cycle of -10%.

Table3. RespondentPopulation

Cycle	Quantity
IV	145
V	131
VI	118
VII	106
VIII	95
IX	86
X	80
Total	761

To calculate the size of the known sample, we use the following:

n =Sample size.

N =Population size 761

$\sigma =$ Population Standard Deviation 0,5

Z =Levels of confidence 1,96

e =Acceptable Limit of Sampling Error 5% (0,05)

$$n = \frac{761 * 0.5^2 * 1.96^2}{(761 - 1) * 0.05^2 + 0.5^2 * 1.96^2} = \frac{730.9}{2.9} = 256$$

If I survey 256 people, 95% of the time, the data you want to measure will be within $\pm 5\%$ of the data you observe in the survey.

3.3 Data Collection

The interview research methodology was used as the primary tool of the questionnaire.

To evaluate the research variables, we used an 11-question questionnaire.

3.4 Procedure

For the survey-based data collection and distribution process, the following steps will be considered:

- Elaborate a list of questions asked about the factors to implement an E-learning module.
- Elaborate invitations to the students of the Administration career of UNMSM to send it digitally after approval of the dean of the faculty.
- Wait for confirmation to proceed with the filling out of surveys.

3.5 Data Reliability

Cronbach's alpha will be used to validate the instrument. The instrument will be validated with professionals from Education and IT Management.

Cronbach's alpha is interpreted as follows: the closer the alpha value is to 1, the greater the consistency of the items analyzed. Therefore, if the alpha value is more significant than 0.7, the instrument is accepted.

3.6 Data Analysis and Interpretation

The following have been considered for the statistical analysis:

- Reliability test using Cronbach's alpha.
- Analysis of results
- Discussion of results

4. Results and Discussion

The following analysis was made based on questions about using ICTs and student motivation to determine the factors of implementing E-learning modules in conjunction with the best methodology to realize the student's knowledge.

It has been seen that the Flipped Classroom or inverted classroom is a good methodology for a good pace of learning since, under this modality, the student can investigate and solve their courses through these modules before the start of class, so that later, with the teacher in a synchronous way, they can validate the activities carried out.

Concerning B-learning or Blended, it is a semi face-to-face methodology; it would be used once returned to the face-to-face classes since this methodology can carry out activities using the E-learning modules synchronously or asynchronously.

4.1 Reliability Analysis

Reliability analysis was carried out using Cronbach's alpha based on 761 students surveyed to validate the instrument's reliability.

Likewise, the general criteria of [30][31][32] have been used, "since the questions have been measured using the Likert-type scale and, according to the authors, this type of items in this scale measure the same construct and are highly correlated".

Table 4: Cronbach's alpha Reliability Interpretation. [31]

Coefficientvalue	Interpretation
>0,9	Excellent
Between 0,9 - 0,8	Good
Between 0,8 - 0,7	Acceptable
Between 0,7 - 0,6	Weak
Between 0,6 - 0,5	Poor
< 0,5	Not acceptable

Table5: Cronbach's alpha Reliability Statistics.[32]

Alpha of Cronbach	Number of elements
0.878	11

The value of the coefficient we have obtained is 0.878, which is interpreted as good reliability.

5. Conclusions

As a result of the analysis of the problem of the lack of motivation to use virtual learning tools at UNMSM, it is concluded that only 30% of students who take several courses virtually within their curriculum feel comfortable with this type of methodology because it requires an entirely didactic and easy to handle system to carry the teaching material; To improve this percentage we evaluated the type of E-learning platform to be used to take advantage of the changes that are currently taking place to explore all the necessary resources to invest in a good quality virtual tool and after the analysis of the data obtained in the surveys conducted, we obtained that the factors that influence virtual teaching are as follows:

- ICTs are necessary for the daily life of the student today due to the pandemic.
- E-learning platforms are practical and dynamic means to obtain new knowledge.
- Technological attitude, students are able and willing to acquire new knowledge through new learning methodologies using virtual media.
- Continuous training, teachers, students, and administrative staff must be constantly trained and updated to use E-learning tools correctly.
- Ubiquitous adaptability, the virtual platforms must be adapted for laptops, PCs, mobile devices, or tablets; and these must be portable.

The methodology to be used for the proper use of E-learning platforms, according to this research, is the Flipped Classroom or B-learning (Blended or Semi face-to-face). The latter will be necessary when face-to-face classes are retaken in the future. The teacher may decide to apply it synchronously or asynchronously as appropriate.

We are entering a new world where technology is imposing itself on our life habits, mainly because it is already necessary. We must be open to change and allow new creations, and be part of them..

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