VIRTUAL AND MOBILE APPLICATION EDUCATION IN TELEMEDICINE, BIOSECURITY, PSYCHOLOGY APPLIED TO COVID - 19: ADDIE METHODOLOGY

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ABSTRACT

In the present research work on a Virtual Education Center and mobile application, Telemedicine, Biosafety, Applied Psychology before Covid 19 through the ADDIE methodology is addressed through this design at the National University of Chimborazo and the Ministry of Public Health of Ecuador that require it for the learning of Covid 19 in the aspects mentioned above, as well as making an early diagnosis of the object of study, the Analysis, Design, Development, Implementation and Evaluation (ADDIE) methodology will be used for its development and the use of agile methodologies for the mobile application the problem It happens that many people have a lack of knowledge about the causes and how to make a diagnosis of the presence and contagion of the virus. Hence the proposal for the design of the virtual classroom to a mobile application with an innovative, friendly and interactive approach, facilitating the user to generate meaningful learning about the virus

Keywords: Virtual education, Telemedicine, Biosecurity, Applied Psychology, Covid - 19, Addie, Mobile Application

I. INTRODUCTION

This research on virtual education in Telemedicine, Biosafety, Applied Psychology in the presence of COVID-19, through the Addie methodology at the National University of Chimborazo and Ministry of Public Health of Ecuador allows to implement educational strategies to learn more about the SARS-CoV-2 virus, its origin and problems in health, as well as for the effect of confinement the mental alterations it causes with harmful effects on people.

The presence of COVID – 19 in Ecuador and the world has generated socio-economic changes in the population, confinement has contributed to the development of changes in work, education, health and other aspects because of the increasing rates of contagion and deaths of the population causing that in the field of education and health it is necessary to look for methodologies and tools that allow students and citizens to reach effectively and effectively to know SARS-CoV-2 its origin, action, ways to prevent it and consequences of not being careful, so we have found on the Internet a strategic ally to approach the classroom with the required knowledge without involving moving to the classroom or a large cost to acquire information and make available to students and citizens in general through a virtual classroom, web or mobile apps that previously couldn't be knew by hand.

These applications offer interactivity, fast communication, dynamism in the presentation of information, use of multimedia resources of different type, scientific articles and other reads that allow to serve users with different...
styles of learning (Visual, Auditory, Kinesthetics), all in one place: the computer and its virtual environment with network connection.

The virtual classroom is the means in which those involved in the learning teaching process (PEA) carry out activities that lead to learning (Horton, 2000). For Muñoz (2002) the history of educational technology, from Socrates to Seattler, emerges as a pedagogical discipline in North America in the mid-20th century, even though its roots lie in the development of didactics. The use of Information and Communication Technologies (Tics), we talk about audiovisual communication and classroom processes with theoretical, philosophical and psychological sustenance according to the evolution of them.

For Weinstein (2018) telemedicine is a branch of cyberhealth that uses communication networks to provide health care and/or medical education services rather than difficult in this case because of confinement effects considered to be critical factors. Telemedicine is seen as a necessary tool as a hospital of the future.

For Herrera (2020) the difficulty in the use of ICTs in most cases is reflected in the ignorance of the specialist professional hen implementing them in his educational or professional exercise process. Psychology and ICT are applied in the experimental, social, psychometric, clinical, educational fields (Bornas et al., 2002).

For Ramirez (2009), the technological as alternative educational field for the development of the PEA through the implementation of these virtual means generates environments beyond the face-to-face, multimodal, mixed, online and mobile, perfecting that these can be combined to innovate, develop and research in any field. Tics at this time are strategic resources for the management of the PEA. In this regard, Compte and Sánchez (2019), as well as Pardo-Cueva, et al. (2020), have helped to energize the gestion of higher education.

For Morales (2014) the ADDIE methodology is a set of methodologies for the development of learning objects, as a standard in educational programs with a significant, orderly and conducive contribution as a valuable model for complex situations such as confinement by presence of Covid 19 considered as virtual within schools according to the provisions of the government to perform it in this way to protect the lives of the educated, its name comes from the acronym: Analysis, Design, Development, Implementation and Evaluation, its method is based on the development of virtual learning teaching environments, the training results of each stage allows to feed back the knowledge that the user acquires in each phase.

In other words is based on the construction of different items or reusable models, consists of 5 phases and each phase can be divided into sub-phases, each interactive action is sequential in its construction before starting another is tested or valued, which gives it a sensitive and highly proactive character (Maribe, 2009), with diagnostic, formative and summary evaluation that is complemented by a sensitive and highly proactive character (Maribe, 2009),with diagnostic, formative and summary evaluation that is complemented by a feedback to generate meaningful learnings.

**Analysis:**
The entire training process is based. Deliverable products will be the design of activity blocks and then develop them. The proposed type of learning is chosen, the system to be used in the case of the University SICOA system that is implemented as a virtual.

**Design:**
At this stage the PEA is systematically developed, based on the deliverable products of the previous phase and ends with a scheme for its subsequent development the same as it has: objectives and results of learning, evaluation, practical and experimental activities of the learning process.

**Development:**
This stage consists of the application of the technological educational course and its content and instructional activities for the PEA with dates to achieve learning achievements.

**Implementation:**
At this stage the products, processes and actions of the PEA are made available to users what is called the application of the technological resource.
Evaluation:
At this stage, the achievement is determined, and the PEA is quantified by comparing the evaluation criteria against the institutional and national regulations governing the higher education of Ecuador. The research will be carried out as a practical component at the National University of Chimborazo, Faculty of Engineering and Ministry of Public Health through a virtual educational center to strengthen knowledge of the SARS-CoV-2 in Telemedicine, Biosecurity, Applied Psychology that requires knowledge to act before the covid 19 pandemic. The user will have an innovative, friendly, creative and interactive resource, facilitating meaningful learning about the Covid 19.

This research aims to apply the virtual classroom in the context of Covid 19, since currently there is no educational technological resource in Telemedicine, Biosecurity and Applied Psychology for pea. The overall objective is to develop an educational virtual application for meaningful learning in the presence of SARS-CoV-2 with the ADDIE methodology.

From the ISE-OO the approach of interactive micro-worlds and object orientation; the elements of the microworlds most commonly used in interactive mobile services are: World, Scenarios, Characters and Roles, Argument and History, Compensatory Variables, Control Variables, Result Variables, Communication Zones, Ambient-Characterization, Recovery of Previous States, User Information Management, Mechanisms for Performance Analysis, Expansion of Micro-World Possibilities, Customization of the Environment and, Support for Group Communication, among others(Castro et al, 1998).

From the agile methodologies are inherited the concepts immersed in the four postulates that refer: (Beck et al., 2001).

- Develop software to get information quickly.
- Responses to change to develop a plan.
- Collaborate with the client for contractual negotiation with the client.
- Interaction on processes and tools

II. METHOD
The methodology used is ADDIE, based on learning-by-learning objectives, structured sin Bloom Taxonomy, with learning results with controlled workloads to generate meaningful learning in the subject of study raised.

For the construction of the virtual classroom, the Moodle platform of the National University of Chimborkazo was used with the following link: https://uvirtual.unach.edu.ec/

Stage 1. Classroom Design:
As an initial part of the construction of the virtual classroom of Telemedicine, Biosecurity and Applied Psychology to provide attention and advice for the presence of Covid – 19 the following teaching algorithm was established for its structuring with the following contents:

Graphic No. 1. Didactic algorithm del Aula virtual.
Stage 2. Academic content by sections of the virtual classroom:

The sections of the virtual classroom regarding The Conceptualization of Covid 19, Telemedicine, Biosafety, Applied Psychology and Feedback protocols are subdivided into thematic components with the following contents:

- Teaching component
- Practical Assessment Component

Of the thematic contents developed each component is subdivided into blocks with the following items:

- Teaching resources
- Audiovisual resources
- Tasks
- Bibliographic resources

Graphic No. 2 Virtual classroom structure.

Stage 3. Virtual classroom application for the development of a Mobile application to determine the presence of Covid 19:

Once all the contents have been developed and disseminated to students of the subject of Occupational Safety and Health for the knowledge of Covid 19, in parallel a Mobile application is developed with students at the School
of Information Technologies requested by the Ministry of Public Health of Ecuador for a diagnosis of whether users have Covid 19 and on knowledge of the virus.

The methodology for mobile application development is based on the experience of previous research in mobile applications, evaluation of the potential for success for third generation services called 6 M, engineering educational software with object-oriented modeling (ISE-OO), and mainly on the values of agile methodologies.

The mobile application developed contains the following structure:

![Graphic No. 3rd. Didactic algorithm del Aula virtual.](image)

Source: Own.

III. CONCLUSIONS

The research proposal of the virtual educational center and mobile application with the aim of incorporating new technologies into the learning teaching process that links means of knowledge and action before Covid 19 to carry out telemedicine. Protocols of Biosecurity and Applied Psychology, as it presents problems being a delicate subject that lives the world that is the presence of the pandemic that users and the community at large need to know it.

The application of the virtual educational center opens the possibility that this significant learning to have a different action than the pandemic is acquired by users in an easy and comfortable way thanks to the incorporation of new technology, graphical, interactive and creative, allows the user to understand how to act before the Covid 19 structurally and sequentially in the application menu, for the process with interaction with real and virtual media.

The application of the mobile device allows by means of a test with the possible symptoms of Covid 19 to determine the presence of the same, if it is high it proceeds to refer it to medical control in the nearest Ministry of Public Health to schedule a medical assessment or possible hospitalization in a quick way.

In addition to the information, it contains about the Covid 19 the mobile application allows to have a greater knowledge about it to improve its mode of action, in the same way it has a test that allows to evaluate the degree of knowledge and feedback on this topic.

REFERENCES


www.turkphysiotherrehabil.org