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Proposal for Instructional Design of Associate's and Bachelor's Degree Academic Programs at the Autonomous University of Nayarit

Propuesta para el diseño instruccional para los programas académicos de profesional asociado y licenciatura en la Universidad Autónoma de Nayarit

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Abstract

At the Autonomous University of Nayarit, as a Public Education Institution of state character, this document was generated as a proposal to carry out instructional design in response to the challenges posed by the 2020 pandemic, which leads to rethinking what it means to offer academic programs in a virtual or hybrid modality. The objective of this proposal was to provide guidelines to support organizing procedures for designing and developing educational activities within the university. This methodology was proposed based on the ADDIE Model, so that teachers could carry out the phases of the model in a flexible and interactive way, allowing them to congruently perform the process to configure learning environments in virtual or hybrid settings. This proposal directly benefited teachers participating in academic programs offered through the Moodle platform and other platforms that have been the basis for the creation of these learning environments.

Instructional design, ADDIE Model, Learning environments

Resumen

En la Universidad Autónoma de Nayarit, como Institución de Educación Pública y de carácter estatal, se generó el presente documento como una propuesta de diseño instruccional en atención a los desafíos que nos dejó la pandemia en 2020 y que implica ofertar programas académicos en modalidad virtual o hibrida. El objetivo de esta propuesta consistió en proporcionar las directrices que apoyaran a organizar los procedimientos para diseñar y desarrollar actividades educacionales al interior de la universidad. Dicha metodología fue planteada a partir del Modelo ADDIE, para que los docentes llevaran a cabo las fases del modelo de manera flexible e interactiva, lo que les permitiría realizar de forma congruente el proceso para configurar ambientes de aprendizaje en la virtualidad o en escenarios híbridos. Con esta propuesta se benefició directamente a los docentes que participan en programas académicos que ofertan a través de la plataforma Moodle y otras plataformas que han sido la base para la creación de estos ambientes.

Diseño instruccional, Modelo ADDIE, Ambientes de aprendizaje

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Introduction

Due to the pandemic situation that was experienced and that as a consequence brought changes in different areas of human life, education was no exception, and as a result of these changes, new schemes for professional training were generated. For their part, universities and higher education institutions were faced with the need to support their teachers and design various strategies to meet the new challenges presented, where offering only face-to-face education was no longer viable due to the risk it represented. Under these circumstances, it was proposed to make use of alternative modalities, through which education could be offered in virtual, distance or mixed modalities.

The various collaborations were presented between Higher Education Institutions (HEIs) as well as the National Association of Universities and Higher Education Institutions (ANUIES), which in this framework and with the purpose of contributing to address these new scenarios, approved a document that offers a series of criteria to follow up the school cycle, whose objective was to ensure that students conclude their studies and have the greatest possible coverage (ANUIES, 2020).

In this same sense, the Autonomous University of Nayarit (UAN), presents the following document as a support guide for university teaching work, with the aim of providing actions to guide teaching practice in its transition to work in the so-called non-conventional modalities. To this end, a model of instructional design is proposed to provide guidelines that support the organisation of procedures for designing and developing educational activities.

The instructional design for the academic programmes of associate professional and bachelor's degree at the Universidad Autónoma de Nayarit

Conceptual elements

Distance education

Distance education is a non-conventional educational modality that has been strengthened and consolidated as a result of technological, scientific and pedagogical advances, as well as the social demand for education.

It is characterised by the fact that it does not require students to be physically present in the same place as the teacher, an aspect that once meant studying by correspondence.

Burns (2011) defines it as a "planned learning experience or method of instruction characterised by the permanent separation of instructor and learners, where communication takes place through digital and print media" (p.9). Torres (2004) states that it is "a set of pedagogical strategies and communication mechanisms that link teachers-tutors with students to develop teaching and learning activities, not coinciding in time and geographical space, generally taking place outside university campuses" (p.9). (p.37).

Although the conceptions of distance education are diverse, there are permanent elements that characterise and define it; these have to do with the geographical separation between students and teachers and the implementation of instructional methods or strategies for the acquisition of the expected learning. In this sense, García Aretío (2001, cited in Moreno Castañeda, 2012) establishes four stages or generations that allow us to understand how distance education has evolved:

- First generation (1850 to 1960): correspondence teaching.
- Second generation (1960 to 1985): multimedia teaching.
- Third generation (1985 to 1995): teaching via the Internet.
- Fourth generation (1995 to 2005) (estimated): e-learning.

To date, 15 years have passed since the last generation defined by García Aretío, so it is important to highlight that a wide variety of electronic media are currently used to send or receive support materials, as well as for synchronous and asynchronous interactivity between teachers and students, which, thanks to mobile technologies, are diversified as a result of the functions they offer, such as: sending multimedia messages, interaction in social networks, and the collection of images or information in different formats. In addition to the above, the strengthening of specialised educational platforms means that they are not only aimed at a specific group of people, but can be opened up to train thousands of people through massive open online courses (MOOCs).

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New technologies have significantly strengthened this type of education, but it is also necessary to highlight that tools such as e-mail, television, radio, telephone, printed study guides and, of course, textbooks, continue to be key tools for addressing the particularities of the population through distance education, which must place special emphasis on learning activities and on the participant's capacity for self-learning, as well as on the feedback provided by the teacher, which is very important in this type of modality.

It is necessary to carry out a planning of the learning process mediated by different technological tools that allow the fulfilment of the objectives or purposes established in the study plans and programmes, as well as facilitating the processes of synchronous and asynchronous communication between the subjects. This allows each institution to determine the most convenient means to carry it out according to its context and possibilities.

Virtual education

The term virtual designates something that is not present in the place, only inside a computer, it is then that, when speaking of virtual education (e-learning or online education) is a modality that refers to the "creation of an artificial world through a computer system where the user has the impression of being in that world, being able to navigate through it and manipulate the objects in it" (Chan, 2010, p. 13), that is to say that it is propitiated in a space created as a representation of diverse contexts, and at the same time of spaces of action and interaction.

It is characterised by the creation of virtual learning environments, the internet is the main tool, as well as the use of learning management systems (platforms) where students and teachers can be connected at the time chosen by each of them regardless of geographical space, in turn encouraging self-management of learning. The means of communication and interaction used are synchronous and asynchronous and feedback is essential.

This modality is derived from distance education and is identified with it, however "[...] distance education cannot be delivered virtually, but virtual education is delivered at a distance by definition" (Silvio, 1998, p.11).

It is important to point out that distance education does not create alternative virtual realities to the existing one, but that Information and Communication Technologies (ICTs) are complementary and mediating means to a learning process situated in a concrete reality that is also helped by other traditional means of communication.

E-B-M Learning

As mentioned above, the use of various electronic media has had an important influence on people's daily lives, as they have been gradually integrated into various activities related to work, study and, of course, leisure. In the case of the fields of health, protection and education, they have configured their work schemes to respond to the current dynamics of interaction between people influenced by the use of digital devices with internet access.

In education, institutions have been changing their training schemes based on the integration of information and communication technologies, to the extent that, at most educational levels in our country, there are a considerable number of institutions whose training processes are supported by the use of technology. From this, it is important to mention or allude to some of the types of learning that guide the design and implementation of classes nowadays, which are: e-learning, b-learning, and m-learning. These are defined by Verdún (2016, cited in Casillas and Ramírez, 2016) as follows:

– **b-learning** or blended learning: this is a training modality that focuses on learning derived from the mixture of pedagogical strategies, specific to face-to-face and virtual models.

– **e-learning** refers to the development of formal or non-formal distance learning that is entirely virtual through the use of ICT. The emphasis is on interactive and flexible learning. A current challenge is to achieve distributed learning environments involving participatory and interactive communities of enquiry and practice.

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– **m-learning** or mobile learning: this is understood as the possibility of learning via the Internet, various mindtools or other technological platforms, but with maximum portability, interactivity and connectivity.

Therefore, it is important that the teacher is able to identify the type of course he/she wishes to develop, in order to facilitate the design and development of these.

Elements that make up the undergraduate instructional design projects at the Universidad Autónoma de Nayarit

1. Virtual Learning Environments (VLE)

In virtual education, the concepts used to name the spaces where teachers and students participate actively mediated by various technologies are related to virtual learning environments (VLE). A VLE is a set of synchronous and asynchronous interaction environments where, based on a curricular programme, the teaching and learning process is carried out through a learning management system (Rayón, Escalera and Ledesma 2002). In this sense, Chan (2004) expresses that a VLE is integrated by spaces that coexist with each other but that each of them has its own function and meaning:

– The information space is where the various types of inputs to be processed are located. In this space, information can be presented in an organised way or to be investigated by the students. The information can be provided by many different means: exhibitions, documents, data banks, images, graphs.

– The interaction space is where situations are arranged for the subjects of the information to exchange information of all kinds: opinions, products of their work, doubts, projects, creative expressions.

– In the production space there are tools and devices for processing information, carrying out exercises, solving problems.

– The exhibition space is characterised as a space for the circulation of learning products, for the socialisation of their results. In this space students express the achievements of their efforts and in turn expose what they find in the products of others.

It is also the place where students and teachers come together to interact psychologically in relation to certain contents, using previously established methods and techniques with the intention of acquiring knowledge, developing skills, attitudes and, in general, increasing some kind of capacity or competence. (Enrique y Alzugaray, 2013).

Díaz-Barriga (2013) describes a learning environment as the result of establishing didactic sequences that offer an ordering of actions to be carried out, not necessarily in a unique way. Duarte, Gómez, Restrepo, Velásquez, Rojas, Muñoz and López (2009) consider that thinking about learning environments for virtuality is oriented towards student and teacher networking schemes focused on the development of learning. It is therefore necessary to facilitate the necessary resources for the development of communication and access to information.

Therefore, the design of a VPA has to refer to a whole: spaces, objectives, knowledge and human beings establish relationships with a purpose, thus generating a web of interactions associated with the solution of needs that require, every day with greater force, the creation of artificial structures by man to be achieved (Barbosa, 2004).

Dillenbourg (2000) specifies a list of characteristics of a virtual learning environment:

– It is a social space, where interactions between participants occur in an environment mediated by tools provided.

– The virtual space is a representation. The representations are diverse, ranging from text to 3D proposals.

– Learners are not only active, they are also actors.

ISSN 2410-3977

– Virtual environments are used as a support for particular subjects, extra-class support and in mixed mode during face-to-face classes.

Then the virtual learning environment is integrated according to Díaz (2004) of multiple technological tools, the instructional design of the proposed information, the psycho-pedagogical strategies, the actors and the objects produced as a result of the actors' activity with the learning activities and with the rest of the actors.

It is the set of interaction environments, synchronous and asynchronous, where, based on a curricular programme, the teaching-learning process is carried out through a learning management system (López Rayón, Escalera, Ledesma, 2002).

2. Personal Learning Environment (PLE)

Personal Learning Environments or PLE (Personal Learning Environment) acquire transcendence when building knowledge in a personalised way on the web. They refer to a set of tools or services for learning gathered from different contexts and environments to be used in education. Fiedle and Plata (2009, cited by Cabero, Marín and Infante, 2011) define them as a collection of instruments, materials and human resources that a person knows and has access to in the context of an educational project at a given point in time.

Therefore, the LPS should be seen as a system that supports both students and teachers in managing their own learning. As Casquero (2012) points out "a personal learning environment (PLE) is an attempt to create a suitable learner-centred environment that incorporates all the tools, services, content, data and people involved in the digital part of the learning process".

Adell and Castañeda (2010) mention that a basic PLE essentially has three types of elements:

– Reading tools and strategies: the sources of information it is possible to access that offer such information in the form of an object or artefact.

– Reflection tools and strategies: the environments or services in which it is possible to transform the information.

– Relationship tools and strategies: environments where it is possible to relate to others where one learns with and from.

In this sense, technological tools are classified according to Adell and Castañeda (2010):

– For information access: publication sites (blogs and wikis), repositories and databases, videos, multimedia, news sites and specific information portals.

– Information creation and editing: wikis, office automation, mind mapping tools, audio editing tools, video creation tools, concept maps, among others.

– Relating to others: social networking tools, videoconferencing, video calls.

The aim of the EPA is therefore to generate conditions for learning, not from an isolated perspective. But in an exercise of continuous collaboration. Where the individual and social part of learning is combined. And in which each student and teacher must identify the tools they consider appropriate to their needs and connectivity conditions.

3. ADDIE model for instructional design

Instructional design is a process that "requires a selection, organisation and specification of learning experiences necessary to teach someone something. Good instructional design is independent of the technology that is personally used to create those learning experiences (Horton, 2012, p.3). It therefore involves the design of mediating actions that allow subjects and objects to act reciprocally, so that the technological tool and the purpose to be achieved by its use are visualised simultaneously. The design of these learning experiences and mediating actions has to "generate a willingness to learn" (Chan, 2010). That is why the development of instructional designs at the Autonomous University of Nayarit (UAN) has selected the ADDIE model as the base and guiding element of this process.

ISSN 2410-3977

This model is characterised by being interactive, recursive and generic, "where the results of the formative evaluation of each phase can lead the instructional designer back to any of the previous phases" (Beloch, 2013, p. 10). Its first stage is the Analysis, in which formative needs or situations that may arise prior to course design are described, taking into account the target population, in this case the students; the physical and digital resources; and the content to be addressed during the course design.

This can be carried out through interviews, surveys, observation or any other means considered relevant to the context in which the analysis is developed. In the Design stage, the course syllabus is developed, the pedagogical and didactic foundation that has been established in the institution and the logical way of organising the content are taken up. The following elements are defined for this phase:

- Purpose or competences of the course
- Determining the learning strategy(ies)
- Design of learning activities and instructions
- Selection of materials or resources
- Design of the learning assessment

It is important to point out that, due to the interactivity characteristic of this model, the design stage can be modified as many times as necessary and where there is a bidirectional relationship with the Analysis. For the purposes of the work, a format for distance or virtual work has been established within the university (see Annex 1), which will enable the work that teachers have been doing in recent months and will continue to do under the current conditions to be standardised.

Development is the creation of materials or resources, such as videos, audios, podcasts, presentations, tools, web pages, multimedia or learning management systems, all based on what was previously designed.

Implementation is the putting into action of what was established in the design and development for the target group of the course. In order to achieve this, it is necessary to:

- Publish the materials in the designated institutional spaces
- Establish permanent and bidirectional communication channels.
- Train teachers
- provide advice to students during the development of the course
- Administration and maintenance of the systems or resources that have been developed
- Have a monitoring and technical support scheme for teachers and course instructors.

It is present in each of the elements of the process and its purpose is to improve the course, so it is both formative and summative, in the sense that it establishes specific criteria to assess the results obtained from it.

For the evaluation of the course, the following subjects and processes are considered:

- Teachers and students
- Learning
- Virtual environment: lms, resources or materials

In the need to move towards hybrid scenarios for university education due to the current pandemic and the new challenges that have arisen from it, it is necessary to establish a series of guidelines to follow in the instructional design of the different learning units of the curricula, for which the following scheme establishes the congruence in the process to follow to configure learning environments in virtuality or in hybrid scenarios. The following is presented in the scheme:

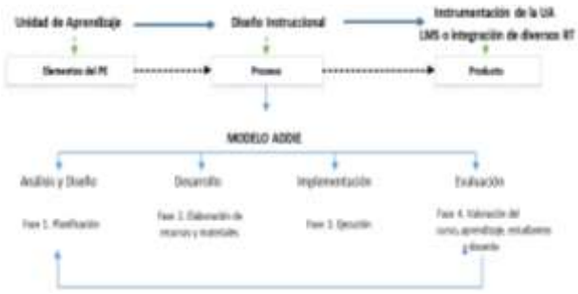

Figure 1 Scheme of work from the ADDIE model
Source: Taken from the Curricular Project of the Bachelor's Degree in Business Management, UAN, 2015

3. Netiquette for UAN virtuality

The use of the so-called Netiquette refers to a set of guidelines that regulate the praxis of users to communicate in a virtual environment, which are necessary to build collaborative workspaces and which are articulated to the elements established in the codes of ethics of each of these.

In the case of the Universidad Autónoma de Nayarit, there is a code of ethics that establishes the principles that govern the activities developed in the institution. In other words, each member of the university community has the duty to respect and enforce the established principles. Therefore, the work carried out within a virtual environment by a university student is not exempt from these principles.

The code of ethics is defined as "an instrument that condenses a set of rules and principles that, in terms of ethics, establishes the bases and values that govern the conduct of the members of the university community and will be applicable to collaborators: authorities, academic staff, administrative workers, manual workers, students and graduates, as honorary members, and in the relationship with interested parties". (UAN, 2019).

Figure 2 UAN Principles
Source: UAN Code of Ethics (2019)

Conclusions

Among the strategies implemented at UAN to address the changes left by the COVID 19 pandemic and, as a way of responding to the training needs demanded by the population that requires professional training without the need to attend school, whether at the undergraduate or associate professional level, academic programmes have been created based on alternative methodologies for instructional design.

The ADDIE Model turned out to be a methodology that was easy to develop, since, based on its stages, teachers can go from planning to evaluation as many times as necessary, as it is not a unidirectional process, but an interactive, recursive and generic model. In this way, as specified in figure 1, the elements of instructional design generate appropriate experiences within an exercise of continuous collaboration, where the individual and the social are combined.

Within this proposal, it was also important to consider the guidelines that will regulate the praxis of the users, so the Netiquettes for the UAN virtuality, were manifested from what is established in the code of ethics of that institution, with the aim that the duties and values are respected regardless of the modality where it is performed. Today, this part is of utmost importance, because the materials that are shared from these alternative methodologies for instructional design must be within a framework of responsibility, professionalism, integrity, tolerance and equity (figure 2 UAN Principles).

Finally, it is important to point out that the experiences obtained during the time that the ADDIE Model has been implemented at the university have been a milestone for future designs, because teachers have been trained for its implementation and the results have been satisfactory.

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