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RESEARCH

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IMPLEMENTATION OF THE H5P LABORATORY TO EXERCISE THE CREATION OF DIGITAL CONTENT IN UNIVERSITY TEACHERS

Implementación del laboratorio H5P para ejercitar la creación de contenido digital en el profesorado universitario.

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ABSTRACT

Introduction: the digital content creation competition has fallen to a level between basic and intermediate that seems impossible to move to an advanced level. The purpose of this study was to implement a H5P laboratory to strengthen said competence in UNAH university professors. **Methodology:** through a quantitative descriptive approach, the level of self-perception that teachers have around two dimensions was identified: creation of digital content and reprocessing and creation of virtual learning objects (OVA). Likewise, the H5P laboratory was built using an ADDIE Model and a Cascade Model in its design phase. **Results:** were obtained from a sample of 25 teachers in which a basic development level A1 is observed for both dimensions. However, specific skills such as word processing and the use of presentations have an intermediate level. **Discussion:** on the other hand, it was determined that the ADDIE Model is effective for the process of structuring and organizing content. Likewise, the design under a Waterfall Model turned out to be efficient for small projects due to its simplicity and ease of identifying strengths and

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weaknesses in the sequential steps of the H5P Laboratory. **Conclusions:** when considering the H5P tool for the creation of OVAs within the framework of strengthening the competence in digital content creation, a specific training process (theoretical-practical) can be established to help achieve the best levels of competence in university teaching staff.

Keywords: teacher digital competence, teacher training, academic qualification, instructional design, ADDIE model**.**

RESUMEN

Introducción: la competencia en creación de contenido digital ha caído en un nivel entre básico e intermedio que aparenta imposibilidad de pasar a un nivel avanzado. El propósito del presente estudio fue implementar un laboratorio H5P para el fortalecimiento de dicha competencia en el profesorado universitario de la Universidad Nacional Autónoma de Honduras (UNAH). **Metodología:** mediante un enfoque cuantitativo de tipo descriptivo, se identificó el nivel de autopercepción que tiene el profesorado en torno a dos dimensiones: creación de contenido digital y reelaboración y creación de objetos virtuales de aprendizaje (OVA). Asimismo, el laboratorio H5P se construyó mediante un Modelo ADDIE y la fase de diseño con Modelo de Cascada. **Resultados:** se obtuvieron de una muestra de 25 docentes en la cual se observa para ambas dimensiones un nivel de desarrollo básico A1. No obstante, competencias específicas como los procesadores de texto y el uso de presentaciones poseen un nivel intermedio. **Discusión:** por otro lado, se determinó que el Modelo ADDIE es eficaz para el proceso de estructuración y organización de contenidos. Asimismo, el diseño bajo un Modelo de Cascada resultó ser eficiente para proyectos pequeños por su simplicidad y facilidad para identificar fortalezas y debilidades en los pasos secuenciales del Laboratorio H5P. **Conclusiones:** al considerar la herramienta H5P para la creación de OVA en el marco de fortalecer la competencia en creación de contenido digital, se puede establecer un proceso de formación específico (teórico-práctico) que ayude a alcanzar los mejores niveles competenciales en el profesorado universitario.

Palabras clave: competencia digital docente, formación de docentes, cualificación académica, diseño instruccional, modelo de ADDIE.

1. INTRODUCTION

In the midst of the virtuality boom, university professors are constantly facing the challenge of finding the most promising methods to approach the teaching-learning process. Therefore, the challenges are manifold and variable; one of them is achieving a dialogical relationship between theory and methodology that is consistent in the teaching practice. Another challenge is paying attention to new didactic-pedagogical trends that put pressure on traditional methods used in both face-to-face and virtual settings. A final challenge could be the imperative generated by digital technologies applied to education.

If anything was demonstrated during the COVID-19 pandemic, it is the need to be prepared for any unforeseen event or change in the educational context. Knowing (beyond the resources we have or don't have) that virtual education is a fundamental ally that requires a constant commitment to acquiring an acceptable level of digital competence to meet the demands of students who are considered "digital natives" (Prensky, 2010).

Numerous institutions, countries, and authors have constructed theoretical frameworks regarding digital competences. These frameworks have become standards that help determine the level of digital competence development in educators. They also serve as a foundation for the creation of various assessment and self-assessment tools. Some are organized by aspects such as curriculum, evaluation, and pedagogy (United Nations Educational, Scientific and Cultural Organization [UNESCO], 2019). Others are organized by the roles of educators, students, policymakers, and instructors (International Society for Technology in Education [ISTE], 2016). Another categorization is based on levels of mastery: knowledge, skills, and attitudes (National Institute of Educational Technologies and Teacher Training [INTEF], 2022, adaptation of the digital competence framework for educators by Punie and Redecker, 2017).

Some of these frameworks serve as references in Latin American countries. For example, the ICT Competences and Standards for Teaching Professionals by the Ministry of Education of Chile, and the ICT Competences for Professional Teacher Development by the Ministry of National Education of Colombia, 2013. These frameworks may have different nuances and application contexts, but the common thread across all of them is the necessity to identify the competences that educators (or different actors) need to acquire in order to effectively use technology in the classroom or beyond.

One of the frameworks with significant international impact is the Common Framework for Digital Teaching Competence (INTEF, 2017 [2022])[2] (Villarreal-Villa, 2019). This framework defines digital teaching competence as "the creative, critical, and safe use of information and communication technologies to achieve goals related to work, employability, learning, leisure, inclusion, and participation in society" (p. 9). It establishes five areas: Information and Information Literacy, Communication and Collaboration, Digital Content Creation, Security, and Problem Solving. Furthermore, it introduces six levels and three competency dimensions: the first dimension is basic,

[2] This framework was recently published through a resolution by the General Directorate of Assessment and Territorial Cooperation in the Official State Gazette (BOE) on July 13, 2020. In light of the developments during the COVID-19 pandemic and its technological advancements applied to education, its update was approved by the Learning Technologies Working Group (GTTA) on January 19, 2022. This update is closely related to the areas, structures, and categories established in the DigCompEdu (Punie and Redecker, 2017), which forms the basis of the INTEF framework (2017). Its significant changes include professional commitment, digital rights, interaction with artificial intelligence, robots, and student competencies. This research focuses on the digital content creation competence and considers the INTEF framework for the year 2017 as the foundation and development of subsequent updates.

including levels A1 and A2. The second dimension is intermediate, including levels B1 and B2. Finally, the third dimension, advanced, includes levels C1 and C2.

The review of scientific literature indicates that in-service and pre-service teachers generally exhibit a basic level of development in their digital competence, and in exceptional cases, an intermediate level. Progressing to an advanced level appears challenging according to the framework established by INTEF (2017) (Borges-Ucán, 2022; Marin-Marin et al., 2022; Jiménez-Hernández et al., 2020; Falcó, 2017).

In a recent study involving 667 university students from the southeastern region of Mexico, it was concluded that self-elaboration and re-elaboration of digital content indicate a level of intermediate-low development. Regarding programming and the application of licenses and copyright, the level is considered basic (Marin-Marin et al., 2022).

In a similar line of research, 485 prospective teachers from different Spanish universities determined that competence in digital content creation should be enhanced as it suffers from significant deficiencies (Jiménez-Hernández et al., 2020). One of the deficiencies identified by García-Martínez and González-Sanmamed (2019) is that students use Web 2.0 tools very little (at a low level) to create content, as they prefer to use word processors and pre-designed presentations, in other words, traditional software.

According to Vargas-D'Uniam et al. (2015) in their research involving 127 teachers, they perceived themselves as more competent in "the use of basic computer applications (word processor, spreadsheet, and databases), as well as for the use of the Internet (browsing, communication, emails, forums, chat, etc.). The competence that teachers consider less achieved is that of creating presentations (PowerPoint and similar tools)" (p. 372).

Similarly, in the autonomous community of Aragon (Spain), teachers acknowledge (84.7%) that ICTs can contribute significantly and improve the teaching-learning process. They possess a moderate level of digital competence for personal use (searching for information, using common tools, etc.); however, they have a lower level (65%) in terms of educational utilization (Falcó, 2017).

On the other hand, the variable concerning years of teaching experience studied by Borges-Ucán (2022) indicated that teachers with fewer years of experience have a higher degree of development in content creation competence than those with more years. In summary, Acevedo et al. (2020) conducted a study with teachers from UNAH, which determined a positive attitude towards technological tools and activities involving the use or testing of digital teaching competence.

Furthermore, some research concludes that H5P is an effective tool for "educational personnel to create, share, and reuse interactive HTML5 content" (Rekhari and Sinnaya, 2018, p. 192). In this sense, active learning serves as the theoretical foundation for the H5P tool implemented in various subjects. Most of the studies are quantitative, non-experimental, and descriptive in nature.

In the study on "The use of H5P in English teaching," Wicaksono et al. (2020) conclude that "H5P can increase students' interest and draw their attention to the taught material" (p. 230). Similarly, Rossetti-López et al. (2021) state that "for the development of the learning object, the H5P tool proved to be a good solution as it is easy to use and does not require programming knowledge" (p. 19). Likewise, teachers in the Pedagogy program at UNAH consider the H5P tool to be intuitive (4.29 out of 5 on the Likert scale) and promote motivation towards creating activities (Díaz, 2020).

Regarding knowledge about H5P and willingness to use it (master's degree students in teaching), in the research by Casañ-Núñez et al. (2021), it is argued that 81.4% do not know how to create H5P content; however, 97.7% are willing to learn how to use H5P for teaching, and 100% are willing to use content designed by their colleagues. These results align with the high assessment of the didactic utility of Moodle and H5P.

Now, in a research focus on active learning in the Mathematics subject, Oña-Ñacata (2020) analyzes virtual classrooms with the addition of H5P, reaching a conclusion similar to the study by Casañ-Núñez et al. (2021). 80% of the teaching staff and 44.09% of the students have never worked on designing or using interactive content activities created with the H5P plugin installed in the Moodle virtual platform.

In summary, various research studies conclude that there is a lack of knowledge about creating content using H5P. However, there is a significant willingness (97.7%) to learn how to use the tool because it has been found to increase student interest and capture their attention, it is easy to use and does not require extensive programming knowledge, it is intuitive, and it enhances motivation and interaction with the content (Wicaksono et al., 2020; Rossetti-López et al., 2021; Díaz, 2020; Casañ-Núñez et al., 2021; Oña-Ñacata, 2020).

2. OBJECTIVES

1. Based on this theoretical review, two specific objectives are proposed:
2. 1. To identify the self-perceived level of mastery in the competence of digital content creation among university faculty members affiliated with the Institute of Professionalization and Teacher Improvement (IPSD-UNAH).
3. 2. To utilize an instructional design model to create an H5P laboratory in the Virtual Campus of UNAH.[3].

3. METHODOLOGY

3.1. Method

This research was defined as non-experimental with a quantitative descriptive approach (Hernández-Sampieri et al., 2014; Rivas-Torres y Suck,1995), and its objective was to implement an H5P laboratory to strengthen the competence of digital content

[3] Developed using Moodle version 3.9 and managed by the Executive Directorate of Technology Management (DEGT-UNAH).

creation in the university faculty of UNAH, in the context of addressing the research question:

How to implement the H5P tool to practice the competence of digital content creation in the university faculty of the National Autonomous University of Honduras-UNAH?

3.2. Instrument

For data collection, an ad hoc questionnaire was used, constructed based on two main sources: an exhaustive review of scientific literature and the descriptors established by levels in the Common Framework of Digital Teaching Competence (INTEF, 2017 [2022]).

The adapted questionnaire was titled: "Questionnaire of Competence in Content Creation in University Faculty at UNAH" (Annex 1). It was structured into three dimensions with a total of 15 items, along with a section for general data.

The sections of the instrument were organized as follows:

1. Frequency of using the H5P tool to create materials.
2. Level of proficiency in digital content creation.
3. Level of proficiency in the reworking and creation of virtual learning objects.

Several instruments for digital teaching competence include sections on copyright licenses and programming. However, in this research, it was decided to exclude those two sections and instead include the dimension on reworking and creation of virtual learning objects. This dimension allowed for an understanding of their self-perception regarding the creation of a specific, relevant type of content within their teaching practice.

Each dimension of the questionnaire that structured the instrument was inspired by the DigCompEdu scale (2017), developed by Marin-Marin et al. (2022). It included questions with a five-point Likert scale indicating the level of mastery: None (1), Basic (2), Intermediate (3), Advanced (4), and Expert (5). Similarly, questions related to the frequency of H5P usage were rated on a four-point Likert scale: Never (1), Occasionally (2), Frequently (3), and Always (4) (Borges-Ucan, 2022).

The questionnaire underwent a pilot phase and was administered online using Google Forms to 16 professors from the Pedagogy and Education Sciences Department at CU - UNAH. Subsequently, the data was exported to SPSS software version 27 to conduct the Cronbach's Alpha (Cronbach's Alpha) test to measure the reliability level. The result of the test was: Cronbach's Alpha = 0.951 out of 15 items. As can be observed, the Cronbach's Alpha value is higher than 0.8, ensuring reliability. Furthermore, content validation was performed through the judgment of three experts in educational technology, virtual education, and digital teaching competence.

3.3. Procedure

After validating the instrument, contact was established with the authorities of IPSD-UNAH to apply and facilitate the distribution of the questionnaire (created in Google Forms) through institutional email. Out of the selected sample of 25 teachers, only 22 participants responded to the instrument. Subsequently, the data was downloaded into Microsoft Excel and organized for import into the statistical software SPSS v27, where descriptive statistics were used to present the data.

3.4. Population and Sample

The total population of university professors at UNAH, as seen in the Statistics Portal (2022), is composed of 4,323 teachers. Using a web-based sample size calculator (QuestionProInc), with a confidence level of 95% and a margin of error of 7%, a sample size of 189 teachers was calculated. However, for convenience and the study's objective (implementing an H5P lab), the sample was limited.

In this regard, IPSD used non-probabilistic convenience sampling, applying the following selection criteria: a minimum of three techno pedagogical courses taken in the last year, internet access, and availability during the synchronous session. The final sample was adjusted as follows: 25 teachers, 19 females and 6 males, from the Regional University Center of the Center (CURC-UNAH Comayagua).

4. RESULTS

In this section, tables, figures, and images are used to present the results more clearly. The analyses were conducted in the two studied dimensions:

1. Creation of digital content
2. Re-elaboration and creation of virtual learning objects

Returning to one of the objectives of this study: to identify the level of self-perceived mastery in the competency of creating digital content in the university teaching staff belonging to IPSD-UNAH. Table 1 presents the first dimension of this study.

Table 1

Dimension: Creation of Digital Content.

Dimension: Digital Content Creation (DCC)	**Cases**									
	Nothing		**Basic**		**Intermediate**		**Advanced**		**Expert**	
	N	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**
I can use presentations to create content.	10	45,50 %	8	36,4 %	2	9,1%	1	4,5 %	1	4,5 %
I can use word processors to create content.	9	40,9%	4	18,2 %	6	27,3%	2	9,1 %	1	4,5 %
I can create web pages and blogs.	16	72,7%	5	22,7 %	1	4,5%	-	-	-	-
I can edit audio to create content.	13	59,1%	7	31,8 %	2	9,1 %	-	-	-	-

I can use repositories as a source of resources to create content.	13	59,1%	7	31,8 %	2	9,1 %	-	-	-	-
I can edit images to create content.	12	54,5%	6	27,3 %	2	9,1 %	1	4,5 %	1	4,5 %
I can edit videos to create content.	12	54, 5%	7	31,8 %	3	13,6%	-	-	-	-

Source: Author's own work.

The low (self-perceived) level that teachers report in the development of the competency in content creation is noticeable. Starting with the most representative percentages: it can be observed that creating web pages and blogs is one of the least developed specific competencies. In other words, 72.7% do not show any concern at all for actively learning the application or management of websites or blogs in the educational process they carry out in their teaching practice. At this point, García-Martínez and González-Sanmamed (2019) warn about the low usability of Web 2.0 tools for content creation.

Next, using presentations and word processors indicates that teachers self-perceive themselves at a basic and intermediate level, respectively. This type of recognition has been noted regarding the use of basic computer applications, also known as the use of traditional software (Vargas-D'Uniam et al., 2014). A positive self-perception in these aspects could be considered as a regular exercise of certain digital skills and competencies that teachers perform, indicating their incorporation of strategies that enhance their professional performance.

On the other hand, in the specific competencies that show greater deficiencies, the editing of audio, images, video, and the use of repositories stand out. This indicates that the majority of teachers do not manage these competencies adequately to enhance innovation in their teaching and learning process. This could be a result of the lack of adequate techno-pedagogical training that hinders the proper implementation of such resources or the design of activities that combine all these elements (Buabeng-Andoh, 2012).

Table 2

Dimension: Re Elaboration and Creation of Virtual Learning Objects.

Dimension: Re Elaboration and Creation of Virtual Learning Objects (COV)	**Cases**									
	Nothing		**Basic**		**Intermediate**		**Advanced**		**Expert**	
	N	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**
I can create learning objects using the HTML5 model and integrate them into educational platforms	14	63,6%	5	22,7%	3	13,6%	-	-	-	-

like Moodle - UNAH Virtual Campus.										
They can integrate (link) resources from other websites to the Moodle - UNAH Virtual Campus platform.	8	36,4%	4	18,2%	7	31,8%	3	13,6%	-	-
I can rework or adapt digital content using technological resources, such as diagrams and infographics.	10	45,5%	6	27,3%	3	13,6%	2	9,1%	1	4,5%

Source: Author's own work.

According to the self-perception of the teachers, the competence related to the reworking and creation of virtual learning objects (VLO) is at a low level of development. The least developed specific competence is precisely the one that focuses on virtual objects and their integration into educational platforms. In this regard, 63.3% of them are unable to construct a VLO, let alone integrate it. This result highlights several situations: first, there seems to be little individual interest in self-learning these innovative methodologies to enhance their virtual classrooms. Second, incorporating VLOs into their teaching practice requires a didactic commitment to acquire certain defining characteristics of the object, namely: the pedagogical purpose for which it will be used, compatibility of the digital format, and finally, interactivity and reusability (Wiley, 2007). Finally, the importance of managing teacher training plans or programs to improve their level of learning and enhance their digital competence is evident.

On the other hand, the basic level to adapt technological resources such as diagrams and infographics represents small indications of a desire to reinforce content graphically and attractively, with the didactic intention of conveying information that facilitates assimilation and, consequently, memorization. However, the challenge arises when it comes to creating or reworking infographics, as these require certain design techniques. Nevertheless, there is the advantage of a wide range of digital tools or design programs that facilitate construction.

Finally, the teaching staff that integrates resources from other websites into the UNAH Virtual Campus constitutes 31.8%, placing them at an intermediate level. As evident, they are positioned right in the middle with respect to creating or integrating VLOs. This indicates a certain ability to integrate resources that can be videos, images, podcasts, and academic articles in various formats. This digital competence is not surprising, as one of the criteria considered by IPSD to select participants was that they had taken some (techno pedagogical) courses with the aim of imbuing them with a sense of versatility and innovation, creating an attractive and motivating space for student participation (Condes-Vides et al., 2016).

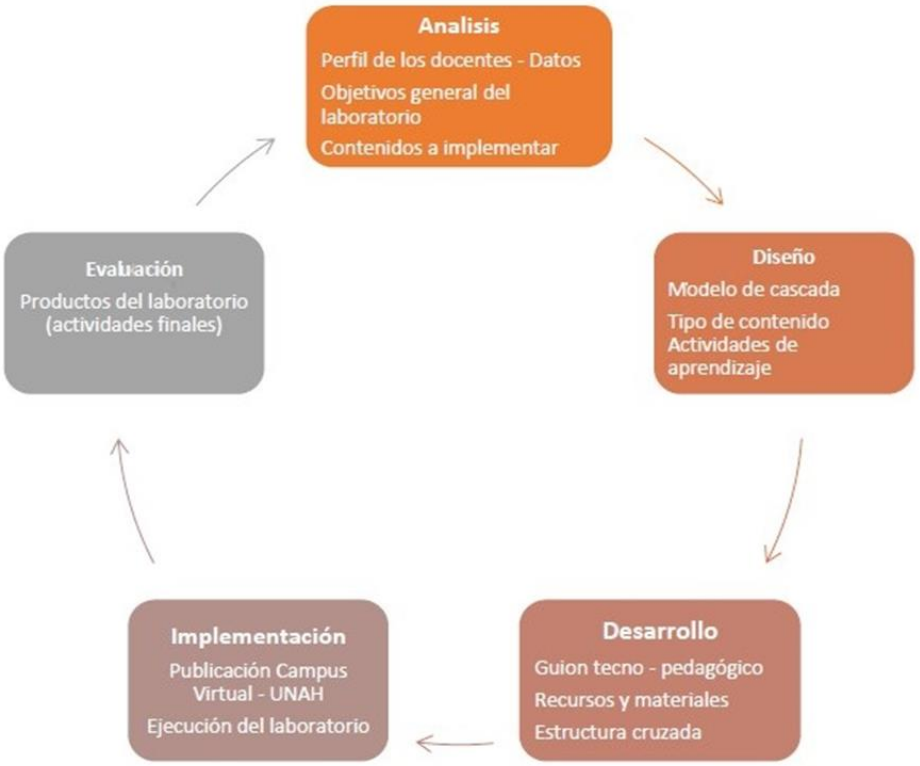
4.1. Instructional Design - H5P Lab

The implementation of the H5P lab as the second objective of this study was carried out through instructional design. According to Stephenson and Sangrá (2008), instructional design is a process in which all the elements that make up a training activity are defined and concretized in how they should interrelate.

The instructional design model that was implemented is known as ADDIE, which includes the phases of Analysis, Design, Development, Implementation, and Evaluation (Baruque et al., 2003). This model is used for the development of programs, courses, materials, and training with an emphasis on virtuality. Figure 1 shows each of the phases with their components.

Figure 1

Instructional Design of the H5P Lab.



Source: Developed based on the application of the ADDIE model, 2022.

It is worth noting that the H5P lab was implemented with a diverse range of curriculum content. Not confining itself to specific content allowed for the incorporation of a variety of examples from different multidisciplinary fields, each representing the university faculty members who participated in the H5P lab.

Analysis: In this phase, sociodemographic data are presented, which helps expand the profile of the faculty.

Table 3

Sociodemographic Data.

Sociodemographic Data.	**Variable**	**N**	**%**
Gender	Female	16	72,7%
	Male	6	27,3%
Age	30 to 45	4	18,2%
	46 or more	18	81,8%
Highest Academic Degree Attained.	Bachelor's Degree	2	9,1%
	Specialty	2	9,1%
	Master's Degree	18	81,8%
	Doctorate	-	-
Years of experience in university teaching.	From 10 to 20	5	22,7%
	From 20 to 30	17	77,3%

The predominance of the female gender seems to be a common denominator among university faculty members. Likewise, a group of participants aged 46 or older with a Master's degree (81.8%) as their highest academic degree attained is observed. Now, regarding years of experience, 77.3% have 20 to 30 years of teaching experience.

In Table 4, a comparison of two actions for creating digital content using the H5P tool is shown.

Table 4

Knowledge and Usability of the H5P Tool.

Awareness of the H5P Tool.		
	Yes	**No**
	31,82%	68,18%
Usage of the H5P Tool.		
Valid	**Frequency**	**Percentage**
Never	17	77,3%
Occasionally	4	18,2%
Frequently	1	4,5%
Always	-	-
Total	22	100,0%

Source: Author's own work.

Knowing about it and using it are two completely different actions. It is assumed that not knowing a tool would imply not using it; however, the opposite is expressed in the 31.82%, equivalent to two participants who do know the H5P tool, but the majority of participants have never used it.

In summary, the H5P tool is not known (68.18%) and has never been used (77.3%). In this regard, it agrees with the statement by Díaz (2020) that expresses: "teachers often do not explore virtual learning environments to their full potential and only adopt a limited set of available tools" (p.4). If the processes of managing, configuring, and editing digital content using the H5P tool are not explored, this competence will hardly be strengthened. In fact, there will be no variability in terms of its levels of

development (basic, intermediate, and advanced), and this is one of the great challenges for teachers who are "digital immigrants" (Prensky, 2010).

Design: For the design phase, a methodological process known as the Waterfall Model, proposed by Nugraha and Haritman (2020), was used. According to the authors, this model offers a detailed framework with several sequential steps.

Figure 2

Waterfall Model for the Design of the H5P Lab.

Source: Based on Nugraha and Haritman (2020).

1) Requirements: Moodle LMS 3.8 - UNAH Virtual Campus and the H5P interactive content plugin.

2) Management: general configuration of the H5P Lab in the UNAH Virtual Campus.

3) Layout: the process carried out by the developer for the structured global design of the virtual learning environment. The content was presented in six blocks under a tabbed format characterized by a random navigation mode, ensuring coherence and logical order of graphical and pedagogical resources.

4) Testing: a test conducted by the developer to identify possible issues.

5) Evaluation: three aspects were evaluated:

1.Graphical: arouses interest and motivation.

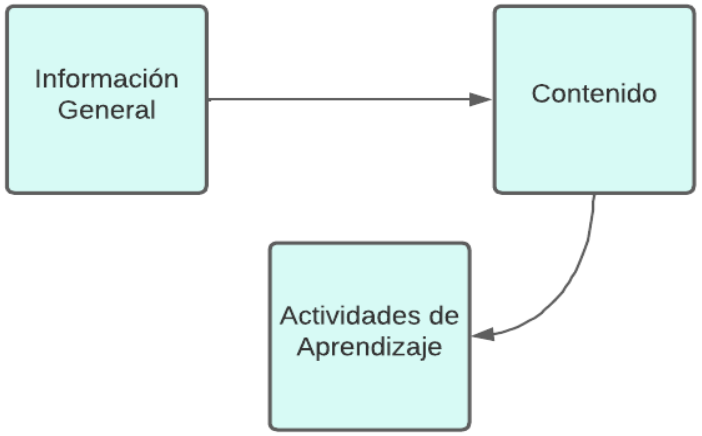
2.Navigation: intuitive and user-friendly.

3.Instructional: the lab's dynamics are understood.

Development: in this phase, a techno-pedagogical script was developed to help define the description of the teaching-learning process. Figure 3 displays the structure.

Figure 3

Structure of the techno-pedagogical script.



Source: Author's own work.

The script established the overall objective of the H5P lab: to explore the processes of managing, configuring, and editing digital content by implementing the H5P tool. Likewise, it included the theoretical presentation (content) about the tool, its conceptual definition, and the skills required for its implementation. In the same vein, the resources and content blocks were developed. Below is Table 5 that shows these blocks:

Table 5

Content Block with the Number of Resources

	Resources				
Blocks	**VT**	**I**	**B**	**A**	**C**
H5P - Content	5	13	2	3	1
H5P - *Quiz*	3	8	2	0	1
H5P - Multimedia	5	2	2	0	1
H5P - *Games*	4	10	2	0	1
Total	17	33	8	3	4

Note: Videotutorial (VT), Images (I), Banners and Icons (B), Audios (A), Content in Word Format (C)

In Table 5, there is a didactic predominance of video tutorials and images. This choice was made because video tutorials "allow information to be presented through multiple expressive forms, potentially motivating students and addressing their different cognitive natures" (Pompeya-López, 2008, p. 7). In this sense, the video tutorial serves as a "deferred consultation method" (Rodríguez-Suárez et al., 2016) to continue delving into activities that were not covered in the synchronous session.

Likewise, the development was carried out through a cross-linked structure. According to Márquez and Sanguino (2010), in this structure "links to content are intertwined, and the user can decide the direction of navigation based on their interests" (p. 66). Due to the academic diversity of the faculty, this structure is the most suitable according to the interests of each teacher.

Table 6

Cross-Linked Structure in H5P Blocks.

No	Block	Activities Integrated in the Block.	Description
1	H5P – Content	• Dialog card - dialog cards • Flashcard - flashcards • Accordion • Graphic - graphics • Column	All the selected activities in this block are used for content presentation, in other words, to present information..
2	H5P – Questionnaires.	• Quiz set - conjunto de preguntas • Drag and drop - arrastrar y soltar • Hotspot - puntos calientes	This block showcases activities for creating interactive assessments.
3	H5P – Multimedia	• Interactive video - video interactivo • Image sequencing - secuenciación de imágenes • Agamotto - mezclador de imágenes • Audio - audio • Audio recorder - grabadora de audio	Combine and integrate different basic forms of digital communication: images, video, audio, text.
4	H5P - Games	• Image pairing - emparejamiento de imágenes • Memory game - juego de memoria • Encuentra las palabras - Encuentre las palabras	Here, gamification is sought, which has become a didactic strategy where elements of games are included with the purpose of teaching, motivating, interacting, etc.

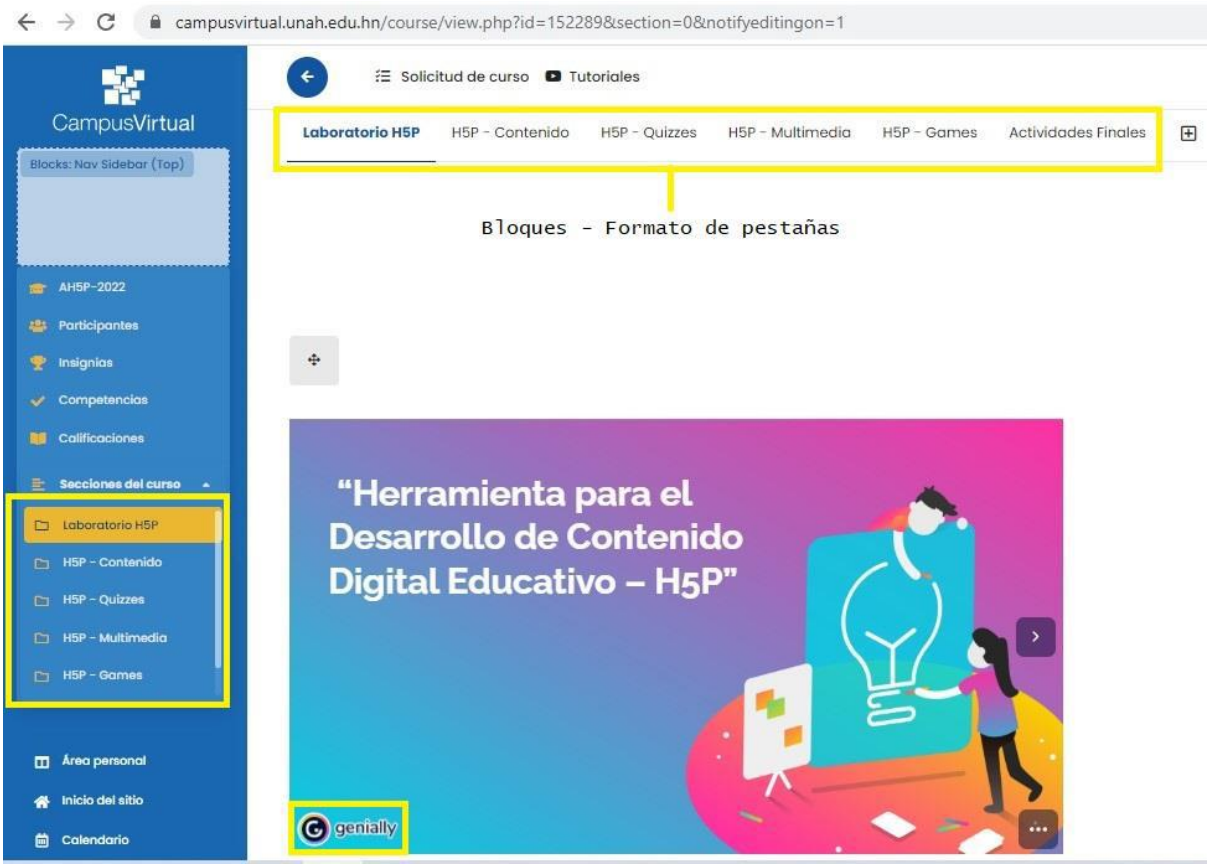
Source: Author's own work.

The activities that integrate the different blocks are unique in configuration but different in application; in other words, each activity was used in a cross-cutting manner and could have perfectly been integrated into another block.

Implementation: The H5P lab was implemented through a synchronous session lasting three hours, conducted in the third academic period (November 2022) with the selected sample of 25 teachers. Figure 4 shows the main interface of the lab and its structure with content blocks in a tab format.

Figure 4

Main Interface of the H5P Lab.



Source: Screenshot of the H5P Lab. UNAH Virtual Campus, 2022.

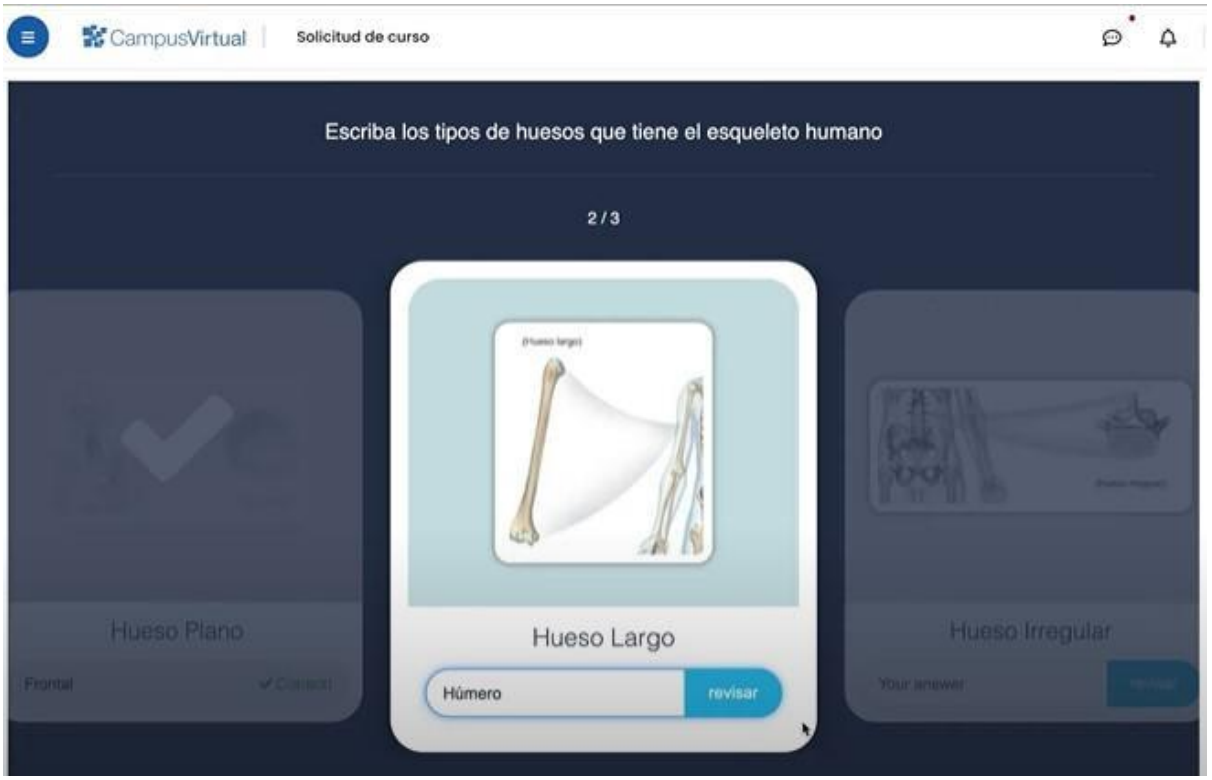
In an analysis conducted by Chen et al. (2021), it was determined that H5P is:

> Built in a modular format so that individual activities can be assembled together, allowing for rapid and customized development. Once created, the content can be shared and incorporated into multiple interactive online activities across various modules, enhancing sustainability. (p. 83)

Evaluation: In this phase of the laboratory, an observation of the interactive content developed by the teachers was conducted. Figure 5 presents one of the activities.

Figure 5

Practice of Interactive Content Creation Carried out by University Faculty.



Source: Screenshot of the final activities carried out by university faculty in the UNAH Virtual Campus, 2022.

Figure 5 depicts an H5P activity called "Educational Cards" (Flashcards). They are a powerful tool that allows them to recall information based on the meaning of certain words, historical facts, mathematical formulas, among others. It promotes focused attention on the correct use of words, thereby strengthening spelling. Furthermore, the feedback is immediate, and depending on the configured settings, the activity can be repeated as many times as necessary, to the extent of achieving proper identification and memorization of the assigned activity.

5. DISCUSSION

The results of this study with university faculty indicate that their competency level for both dimensions: digital content creation and reworking and creation of virtual learning objects, is at the Basic A1 level (INTEF, 2017). However, their self-perception regarding the development of specific competencies such as word processing, presentation usage, and image editing is at an intermediate level. This demonstrates that the aforementioned results align with the basic-intermediate competency level that other research concludes (Marin-Marin et al., 2022; Vargas-D'Uniam et al., 2015; Falcó, 2017).

It was also found that faculty members who are older (46 or above), have a Master's degree (81%), and possess teaching experience (20 to 30 years) have a lower proportion of development in digital content creation. It is observed that during their years of teaching careers, they were not familiar with (68.18%) nor used (77.3%) the H5P tool (as a platform or plugin) for creating VLOs within the context of content creation. The above can be interpreted as a lack of interest, exploration, and usability of the activities and resources available on the UNAH Virtual Campus (Díaz, 2020).

On the other hand, the instructional design under the ADDIE Model (Baruque et al., 2003) used to create the H5P lab aided in three fundamental aspects: firstly, identifying a comprehensive design that allowed for methodologically linking theory with practice. Secondly, employing the term "instruction" as a structuring and curricular organizing element, moving away from the old theoretical dispute with behaviorism. And thirdly, serving as an excellent ally to establish a logical and coherent structure within a Learning Management System (LMS).

In the design phase of the H5P lab that utilized the Waterfall Model (Nugraha and Haritman, 2020), the following advantages were observed: a simplified management and control process, ease of understanding of contents, well-defined and documented structural milestones, and finally, a highly effective model for small projects as it allows the identification of strengths and weaknesses in each sequential step from both a local and global perspective of the entire project.

Likewise, the incorporation of the H5P tool as a motivating, creative, and ingenious device confirmed that high levels of understanding are not required. In fact, numerous studies demonstrate that its usage is intuitive and easy (Díaz, 2020; Rossetti-López et al., 2021; Jiménez-Hernández, 2020). While motivation supports learning, it demands pedagogical discipline to master it. One aspect involves technical usage through practice, and the other is the ability to techno pedagogical integrate the content to be learned.

Therefore, each of the H5P Content Blocks works best when learning objectives are aligned with the nature of what is intended to be taught (Homanová and Havlásková, 2019). In other words, if the content is conceptual, H5P-Content can be used; if it is procedural, H5P-Quiz or Multimedia can be employed; and for attitudinal content, H5P-Games can be utilized due to their characteristics of engagement, fun, and motivation. It's important to recall the cross-functionality of each block as one of the significant contributions of the tool. In other words, contents should not be confined to a specific block; hence, their strategic use will depend on the teaching context intended when selecting the activity.

If the processes of management, configuration, and editing of digital content available in the UNAH Virtual Campus are not explored, the competency in these areas will hardly be strengthened. In fact, there won't be any variability in terms of development levels (basic, intermediate, and advanced), which is one of the major challenges for faculty who are "digital immigrants" (Prensky, 2010).

Acquiring a competency requires the willingness to learn it. Both theoretical and practical mastery are constitutive actions of its domain. In this context, repeated evaluation of one's progress will provide the necessary guidelines for adjustments and approaches in pursuit of clearly defined objectives. It's not just about acquiring the competency; there is a discussion about the need to challenge traditional methods versus innovative methods applied in teaching, according to the didactic-pedagogical demands of modern times.

The sample of faculty selected by IPSD-UNAH corresponded to the teaching staff belonging to the Regional Center of the Center (CURC-UNAH-Comayagua). In this sense, it could be enriching as a future line of research to identify the level of mastery of digital content creation competency in the seven Regional Campuses of UNAH. This could establish comparison parameters that aid in delving deeper into areas of training. Thus, beginning a process of categorization by mastery levels: basic, intermediate, advanced, in accordance with the Common Framework of Digital Teaching Competence (INTEF, 2017).

While the framework of the digital teaching competency used serves as a reference, it shouldn't just establish standard criteria, but should also incorporate an evaluation process capable of measuring actions, tasks, and deeds, going beyond the perception of the individual undergoing assessment. This means there can be a paradox of having a high self-perceived level of digital competency, while having low actual usage records in digital tools. Recognizing these technical shortcomings allows for a demand for more relevant training in this regard (Ruiz-Domínguez et al., 2022).

Based on these findings, it's considered necessary to seek the most suitable strategies to enhance the digital content creation competency. However, research by Fernández and Fernández (2016) maintains that "without technical knowledge of the use and application of digital tools, their implementation in the educational world will be difficult" (p. 103). In this regard, there is a favorable impact concerning the handling of traditional software like computer tools (Vargas-D'Uniam et al., 2015). Such matters might lead to a future study on proven (real) use of these specific competencies in contrast to their self-perceived levels.

Therefore, it is imperative to establish an ongoing training process in tools for interactive content creation. Moreover, beyond merely establishing it, there is a need to reflect on the techno-pedagogical approach that must be adopted. For this reason, it is advisable to initiate this reflective process in university-level curricula, considering that training in digital competencies should extend beyond an instrumental view. In this regard, Esteve et al. (2018) concur, emphasizing the need for systematic reflective practice driven by training in digital competencies. The goal is to achieve a significant impact on the professional practice of teaching faculty.

The results of this research are presented as a contribution to the study of digital teaching competency, with the aim of addressing two challenges: incorporating training programs and reinforcing the use and techno pedagogical application

(Villarreal-Villa et al., 2019). It was evident that the lab developed using the H5P tool provides an opportunity to facilitate and systematize a specific training process (both theoretical and practical) that aids in bridging the gap between those with little knowledge (basic level) and those with extensive expertise (expert level). However, the commitment of university faculty and the strengthening of such initiatives through the management of IPSD-UNAH are required.

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ANNEX

Universidad Nacional Autónoma de Honduras
Instituto Latinoamericano de Comunicación Educativa
Maestría en Comunicación y Tecnologías Educativas
Cuestionario de Competencia en Creación de Contenido Digital en el profesorado universitario
UNAH

Purpose: To gather information about the level of digital content creation competency among UNAH university faculty.

The information provided will be treated confidentially and used solely for academic and educational purposes.

We appreciate your cooperation in advance.

General Information:
Regional Center_____
Faculty_____
Highest Academic Degree_____

Years of Experience in University Teaching: Less than 5 ___ 10 to 20 ___ 20 to 30 ___ More than 30____
Gender: Male (M)_____ Female (F)_____ Age: 25-29 ( ) 30-45 ( ) 46 or more ( )

Instructions:
Below, you will be provided with a series of questions that you should answer based on your perception.
Are you familiar with the digital tool H5P? Yes___ No__

Dimension: Frequency of H5P Usage.	[4]**Never**	**Occasionally**	**Frequently**	**Always**
	1	2	3	4
I use the H5P tool to create interactive materials and produce educational resources.				
Which H5P format do you use most frequently?				
Text				
Image				
Audio				
Video				
Combination of two or more formats				

Dimension: Digital Content Creation	Nothing	Basic	Intermediate	Advanced	Expert
	1	2	3	4	5
I can use presentations to create content.					
I can use word processors to create content.					
I can create web pages and blogs.					
I can edit audio to create content.					
I can use repositories as a resource to create content.					
I can edit images to create content.					
I can edit videos to create content.					
Dimension: Reworking and Creation of Virtual Learning Objects.					
I can create learning objects using the HTML5 model and integrate them into educational platforms like Moodle - UNAH Virtual Campus.					
I can integrate (link) resources from other websites.					
web into the Moodle platform - UNAH Virtual Campus.					
I can rework or adapt digital content using technological resources, e.g. diagrams and infographics					

[4]In this case of selecting the option NEVER, please specify why?