A NEW EDUCATIONAL APPROACH IN THE HYBRID ADAPTIVE LEARNING MODEL IN HIGHER SECONDARY EDUCATION

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Abstract: Hybrid adaptive learning in upper secondary education [1] is an innovative approach that considers from the conception of the model the types of learning (Visual, Auditory, Kinesthetic, etc.) of the students, combining online learning and face-to-face learning to improve the student-centered teaching-learning process [2].

Current generations of students are considered digital natives [3], as they can access, understand and manage the technology necessary to participate in the hybrid adaptive learning model in a transparent manner. Additionally, educational institutions can offer technical support services to ensure that students have reliable access to technology.

Educational centers can also be used to provide personalized and adaptive learning content to students. Students can access online learning materials and teaching resources designed to meet their individual learning needs. Metrics can be developed to be used for the evaluation of student learning. Students can take tests and quizzes online and receive instant feedback on their performance.

The hybrid adaptive learning model also considers communication and collaboration between students and teachers to enhance their strengths and strengthen their weaknesses. Students can carry out teaching activities and receive feedback from teachers on an online learning platform. In addition, students can collaborate on online projects and communicate with their classmates and teachers through the same platform. It is also proposed that this model supports and motivates the development of technological skills of students so that they can learn to use tools and programs. of specific software that may be useful for your professional future.

Keywords: adaptive learning, upper secondary education, educational technologies, personalization of learning.

INTRODUCTION

Education has undergone a significant change in recent years thanks to the evolution of information and communication technologies (ICT). These technologies have allowed the creation of new teaching and learning models, including hybrid adaptive learning, which combines online learning and face-to-face learning to improve the teaching-learning process.

Hybrid adaptive learning in higher secondary education is an innovative approach that seeks to provide a personalized and adaptive learning experience for each student. This approach is based on collecting data from students about their progress and performance, and using learning styles (Visual, Auditory, Kinesthetic, among others) to provide personalized and adaptive learning content.

Hybrid adaptive learning has the potential to improve student learning and knowledge retention. Furthermore, this teaching model can increase the efficiency of teachers and the effectiveness of education.

However, the implementation of hybrid adaptive learning in higher secondary education also presents challenges. Some of these challenges include lack of technology training, cost of technology, and lack of student motivation.

In this context, it is important to explore how educational centers can be a central part in the implementation of hybrid adaptive learning in upper secondary education, as well as the challenges associated with this implementation.

Information and Communication Technologies (ICT) [4], Learning and Knowledge Technologies (TAC) [5] and Empowerment and Participation Technology (TEP) [6] are valuable tools to implement hybrid adaptive learning in upper secondary education. Below are some ways digital technologies can be used for hybrid adaptive learning:

1. Access to technology: Schools can provide access to the necessary technology, such as computers and mobile devices, for students to participate in hybrid adaptive learning. Additionally, computer laboratories can offer technical support services to ensure that students have reliable access to technology.

2. Personalization of learning: Teaching resources can be designed and used to provide personalized and adaptive learning content to students. Students can access online learning materials and digital tools designed to meet their individual learning needs.

3. Learning evaluation: Metrics or indicators are developed to be used to evaluate student learning. Students can take tests and quizzes online and receive instant feedback on their performance. Teachers can also access assessment data online and monitor student progress.

4. Communication and collaboration: The model considers the interaction between participants to be important, which is why communication and collaboration between students and teachers is proposed in person and through the learning platform. Students can submit assignments and receive feedback from teachers in person and online. Additionally, students can collaborate on online projects and communicate with peers and teachers through online platforms.

5. Development of technological skills: Digital tools can be used to develop students' technological skills. Students can learn to use specific tools and software programs, such as spreadsheets and graphic design software, which can be useful for their future careers.

Therefore, the hybrid learning model in upper secondary education can be a valuable tool for reinforcing the student-centered teaching-learning process since it

provides access to the necessary technology, personalization of learning, evaluation of learning, communication and collaboration, and development of technological skills for students.

METHOD

To document this work, the bibliographic review method was used, which consists of the collection and analysis of relevant and updated information related to the research topic [7]. An exhaustive search of scientific articles, books and websites specialized in the topic of adaptive learning and hybrid education in upper secondary education was carried out.

Literature review is a method widely used in scientific research due to its effectiveness in obtaining information from reliable and up-to-date sources [8]. In addition, it allows the collection of information from different sources and perspectives, which enriches the investigation.

To ensure the quality of the information collected, the technique of critical evaluation of scientific literature was used, which consists of evaluating the methodological quality of the reviewed studies [9]. This way, only studies that met the quality and relevance criteria for the research topic were selected.

In summary, the literature review method was used to collect and analyze relevant and updated information on the topic of adaptive learning and hybrid education in upper secondary education in educational institutions.

This method is widely used in scientific research due to its effectiveness in obtaining information from reliable and up-to-date sources, and it allowed the collection of information from different sources and perspectives, which enriched the research.

After the previous analysis of the information obtained, the hybrid adaptive learning model in upper secondary education is documented. This model considers several elements that will be broken down below:

TRAINING PROJECT

A training project for upper secondary education is a pedagogical proposal that aims to design and plan the teaching-learning process, establishing the objectives, competencies, methodologies and resources necessary to achieve comprehensive training of students [10]. This project seeks to develop cognitive, emotional, social and ethical skills that allow students to successfully face the challenges of academic and professional life.

The training project for upper secondary education focuses on the training of students in a comprehensive manner, taking into account their needs and social, cultural and economic contexts. This way, we seek to promote an inclusive and equitable education that allows students to develop their potential and skills to be critical, reflective citizens committed to their community.

To develop a training project for upper secondary education, it is important to take into account the needs and characteristics of the students, as well as the objectives and competencies to be achieved. It is also essential to establish innovative teaching-learning methodologies that promote the active participation of students and the development of practical skills.

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TYPES OF LEARNING

Learning style refers to the way in which students process and retain information, and are classified into three main categories: auditory, visual and kinesthetic [11], without ruling out that there are other types of learning depending on the author who wishes to consider them. In upper secondary education it is important to identify the learning style of students to adapt teaching methodologies and improve their academic performance.

For example, auditory learners prefer to learn through listening and conversation, these students learn best when they are provided information verbally and when they can debate and discuss the topics [12]. Visual learners prefer to learn through observation and visualization. These students learn best when information is provided in the form of graphs, images, and diagrams [13]. Kinesthetic learners prefer to learn through experience and practice. These students learn best when they are given the opportunity to do and experience things for themselves [14].

To adapt teaching methodologies to the learning style of students, it is important to use a variety of techniques and resources, such as the presentation of verbal information, the use of graphics and images, and the implementation of practical activities. Furthermore, it is important to encourage student participation and provide them with feedback to improve their learning process.

Learning styles are categories used to classify the way students process and retain information, the main ones being, but not the only ones: auditory, visual and kinesthetic. Identifying the learning style of students in upper secondary education is important to adapt teaching methodologies and improve their academic performance.

LEARNING PLATFORM

In upper secondary education, a learning platform can improve the teaching-learning process by adapting the methodology and course content to the individual needs and abilities of the students.

Learning platforms using specific teaching resources by types of learning allow information to be analyzed to evaluate student performance and adapt the content and methodology of the course in real time. This allows students to progress at their own pace and receive personalized feedback and assistance to improve their academic performance [15].

Additionally, these platforms can provide additional resources, such as explanatory videos, interactive exercises, and reading material, to enhance student learning and make it more accessible and effective.

DECISION MAKING

Decision making is a key element in adaptive learning in higher secondary education, as it involves the selection and personalization of learning resources, the adaptation of the learning pace, and the evaluation of student progress.

In this sense, adaptive learning in higher secondary education can help students make more informed decisions and develop decision-making skills by offering personalized feedback and adapting course content to their individual needs.

Decision making is also important for teachers, as they must select and personalize learning resources and adapt course content to meet student needs. In this sense, adaptive learning platforms can help teachers make more informed decisions by providing information about student performance and the effectiveness of learning resources.

However, decision-making in adaptive learning also presents challenges, such as the

need for accurate and timely feedback, the availability of personalized learning resources, and adapting the pace of learning to the needs of each student.

Decision making is a key element in adaptive learning in higher secondary education, both for students and teachers. Adaptive learning platforms can help improve decision-making by offering personalized feedback and tailoring course content to each student's individual needs.

DIGITAL TECHNOLOGIES (ICT, TAC AND TEP)

Digital technologies are a valuable resource for the implementation of adaptive learning in higher secondary education. This technology has a wide variety of specialized software and applications which allows students to access different learning resources and technological tools. In the context of adaptive learning, the proposed teaching model can provide a platform for students to interact with the personalized learning resources and carry out practice activities adapted to their type of learning. Additionally, these technologies can allow teachers to monitor student progress and adjust the pace and content of learning based on each student's individual needs.

Importantly, for computer labs to be effective in adaptive learning, certain challenges must be addressed, such as the availability of personalized resources, the need for accurate and timely feedback, and adapting the pace of learning.

In conclusion, ICT, TAC and TEP are a valuable resource for the implementation of adaptive learning in upper secondary education. However, certain challenges must be addressed to ensure its effectiveness and success in adaptive learning.

TEACHER

The role of the teacher in adaptive learning in higher secondary education is essential to ensure that students achieve their learning objectives. Teachers have the responsibility to design and personalize the adaptive learning experience for each student, which requires specific skills and competencies.

First, teachers must understand the different learning styles of students and how to adapt their teaching to meet the individual needs of each student. For example, some students may learn best through hands-on activities, while others may prefer a verbal explanation or visual representation of concepts.

Second, teachers must have technical skills to use adaptive learning platforms and digital tools to monitor student progress and personalize their learning experience. This includes the ability to adjust the pace and content of learning based on each student's individual progress.

Additionally, teachers must provide accurate and timely feedback to help students improve their performance and achieve their learning goals. This may include hands-on practice or detailed feedback on assigned work.

Importantly, although adaptive learning can help personalize the learning experience, the teacher's role remains fundamental in motivating and supporting students emotionally. Teachers must foster a positive and collaborative learning environment and be available to provide guidance and emotional support to students who may need it.

The role of the teacher in hybrid adaptive learning in higher secondary education is essential to guarantee student success. Teachers must have specific technical and pedagogical skills to design and personalize the adaptive learning experience for each student, provide accurate and timely feedback,

DISCUSSION AND ANALYSIS OF RESULTS

The implementation of hybrid adaptive learning in upper secondary education through face-to-face education and online platforms opens a wide range of possibilities in the teaching-learning process to be an effective tool to improve the process of knowledge acquisition by students. students. The results of this research indicate that the use of these technologies can contribute to increasing the academic performance of students.

The use of hybrid adaptive learning platforms would allow students to advance at their own pace, according to their level of knowledge and skills, which gives them greater autonomy and control over their learning process. Additionally, the use of these platforms allows teachers to more accurately identify students' strengths and competencies, allowing them to adapt their teaching strategy to meet the individual needs of each student.

The use of learning platforms, laboratories and digital tools are spaces that allow students to experiment and put into practice the theoretical concepts they have learned in class, giving them a deeper and more meaningful understanding of the topic. In addition, they also offer students the opportunity to work as a team and develop social and collaboration skills.

Despite the benefits of hybrid adaptive learning in higher secondary education, it is important to keep in mind that the implementation of these technologies also presents challenges. Teachers need to be trained so that they can use these tools effectively and adapt their teaching strategy to meet the needs of each student.

It is also important to guarantee access to these technologies for all students, regardless of their geographical location or socioeconomic situation.

CONCLUSIONS

The implementation of hybrid adaptive learning in higher secondary education implemented through digital platforms can be an effective tool to improve the teaching and learning process. This allows the personalization of learning according to the needs and preferences of the students, improving their motivation, interaction and academic performance.

It is evident that the learning style of students is an important factor to consider in the design of hybrid adaptive learning strategies and resources. Therefore, it is important to provide different presentation and representation options for information so that students can choose the one that best suits their learning style.

Implementing hybrid adaptive learning in higher secondary education also presents challenges in terms of infrastructure, access to technology, teacher training, and decision-making. It is necessary to ensure that the necessary resources and support are available to carry out effective implementation.

In conclusion, hybrid adaptive learning in higher secondary education can be a valuable tool to improve the quality of education and students' academic performance. It is important to continue exploring new strategies and resources for their effective implementation and improve the teaching and learning process.

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