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CHATBOT AS A DIDACTIC TOOL IN LIFE PLAN DESIGN

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Abstract: The project "***Chatbot*** as a didactic tool in life plan design" investigates how Chatbots can influence the learning of life plan design in students. It focuses on pedagogical strategies to integrate innovative technologies in a crucial learning unit, which goes beyond academics, as it encompasses emotional, social and professional aspects, and is justified by the need to understand the potential impact of Chatbots in this specific area of teaching, to improve educational quality and promote pedagogical innovation. The guiding research question of the research was: In what way the use of *Chatbot* can influence the learning process and development of life plan design skills in high school students at UDG? The project worked under a quantitative methodology, two surveys were applied as instruments to collect information, with which the impact of the use of Chatbots in the participation and commitment of students was evaluated, as well as identification of possible improvements in its implementation, the results contribute to optimize the integration of Chatbots in the classroom and strengthen the quality of teaching at the University of Guadalajara.

Keywords: Chatbots, Educational Intervention, Educational Technology, Educational Technology

INTRODUCTION

Nowadays, education is supported by technological tools that contribute to the teaching-learning process. This is the case of artificial intelligence (AI), specifically the *Chatbot*, which is an informative program that, with its application, stimulates a real conversation with the student in real time, either by text or voice; it helps the student to achieve their academic goals.

The project proposal "*Chatbot* as a didactic tool for the life plan design learning unit" investigates how *Chatbots* can influence stu-

dents' learning of life plan design. It focuses on pedagogical strategies to integrate innovative technologies in a crucial learning unit, such as this subject, which goes beyond academics, as it covers emotional, social and professional aspects, so that students can organize a future at the end of their high school, projecting a life plan according to their interests, skills, self-knowledge, among others.

The work is justified by the need to understand the potential impact of *Chatbots* in this specific area of teaching, little known, which seeks to improve educational quality and promote pedagogical innovation. The project uses a mixed methodology that combines quantitative and qualitative methods, uses data collection instruments such as surveys and semi-structured interviews, it is expected to evaluate the impact of the use of *Chatbots* in the participation and engagement of students, as well as identify possible improvements in its implementation, the results will contribute to optimize the integration of *Chatbots* in the classroom and strengthen the quality of teaching at the University of Guadalajara.

Since the emergence of the first computers in the 1940s (Fundación UNAM, 2019), the evolution of Information and Communication Technologies has not only followed its course, but has also been potentiated. According to what was established by UNAM in the blog, in the 1980s, robots ceased to be merely a creation of fiction, as giant arms programmed to perform specific tasks began to be used in automobile factories in Japan, thus replacing human workers. Although the goal of robotics is to employ machines in various areas, this is costly and complicated, although advances in research into neural networks and artificial intelligence are progressing at a spectacular rate.

Recently, artificial intelligence has taken another great technological scientific leap with the release of the Chat GPT language modeling software, a publicly available tool developed by OpenAI (https://chat.openai.com) (Hill-Yardin, Hutchinson and Spencer, 2023). According to these authors this software is not capable of emulating high-level critical thinking, although it could be useful for identifying concepts, presenting information, even developing a hypothesis.

The Chat GPT model is one of the most recent advances in artificial intelligence and natural language processing. This model has been trained on a wide range of data and can provide consistent and relevant responses based on the inputs it receives, although it can also provide uncertain or incorrect responses. According to Biswas (2023), AI has the potential to improve student engagement and motivation in their courses and improve their academic performance.

The University of Guadalajara (UDG) has established a solid normative framework that regulates the implementation of its high school education programs, including the Life Plan Design as a fundamental part of its curriculum. However, despite having an approved curriculum design and well-defined internal regulations, challenges persist regarding the effectiveness and proper application of these guidelines in educational practice, one of the main challenges lies in the need to ensure that the implementation of the curriculum is carried out in an effective and coherent manner with the objectives established by the educational authorities.

This implies not only the teaching of the corresponding subjects, but also the active promotion of the development of specific competencies in the students, particularly with regard to the Life Plan Design, where the student designs his/her life project, through decision making, considering his/her needs, resources and context that intervene in his/her personal development, in order to have clarity in the goals he/she sets for him/herself.

The main objective of the Life Plan Design learning unit, as part of the curriculum of the General Baccalaureate by Competences of the UDG, is to provide students with the necessary tools for the design of the "life project, through decision making, considering their needs, resources and context involved in their personal development, in order to have clarity in their proposed goals" (UDG, 2015, p 113), resources and context involved in their personal development, in order to have clarity in the goals they propose" (UDG, 2015, p 113), this process requires not only theoretical knowledge, but the development of certain skills, practices and a comprehensive approach that considers academic, emotional, social and professional aspects.

In addition, the current educational situation is marked by the growing importance of technology in the Teaching-Learning process that although the UDG has established a regulatory framework that regulates academic activities within the Higher Secondary Education System (SEMS) including the integration of educational technologies, such as *Chatbots*, it remains to be determined how these tools can be optimally exploited in the specific context of Life Plan Design.

The design of a life plan represents an essential tool in the process of vocational orientation of students, particularly in the fifth semester of their academic career, this process is not limited only to the planning of professional goals and objectives, but involves a deep reflection on values, personal interests, skills and future aspirations, in this context, the learning unit of Life Plan Design, of the General Baccalaureate by Competences, acquires a significant relevance in the approach of the problem since it arises from the need to understand the use of *Chatbots* in the teaching--learning process.

This problem is framed in the importance of life plan design as an essential tool in the vocational orientation of students, especially in the fifth semester of their training as high school graduates, although this learning unit provides a propitious space for the exploration and definition of goals and aspirations in a reflective manner, so that teaching it effectively requires a pedagogical approach that promotes self-exploration and self-knowledge.

When considering the level of cognitive development of high school students and the possibility of incorporating chat GPT or any other AI as a technological tool in the teaching-learning process, it is necessary to establish certain guidelines that allow the use of this type of tools to become a possibility for the development of soft skills such as the capacity for analysis, critical and reflective thinking, key elements in the formative process of all students, especially adolescents.

In this context, *Chatbots* emerge as a possible solution to improve the teaching of life plan design, since these virtual agents have the ability to offer personalized and accessible support to the student population, in a way that allows them to clarify concepts, answer questions and guide them in reflection and planning activities, however, the effectiveness of *Chatbots* in this specific area of teaching has been little explored.

Therefore, the general objective of this research is to evaluate the impact of the use of *Chatbots* in the classroom for the Life Plan Design learning unit, to achieve this objective, the following specific objectives are raised: to identify student perceptions of the usefulness and effectiveness of *Chatbots* in learning life plan design, to analyze how the use of *Chatbots* influences student participation and engagement in the learning unit, as well as to explore possible improvements and adaptations needed in the implementation of *Chatbots* for teaching life plan design.

While the implementation of AI tools can represent a very useful tool for the academic

life of high school students, it can also become a distractor that slows down their cognitive development, hence the importance of implementing this type of technology in the classroom to identify which tools become a priority in the training process of high school students and which ones are necessary to deepen the potential benefits before turning them into a tool for everyday use.

In general, the identified problematic situation highlights the need to address various challenges related to the effective implementation of the UDG curriculum, particularly with regard to Life Plan Design, and the integration of educational technologies, such as *Chatbots*, to improve the Teaching-Learning process and promote the integral development of students. Therefore, we worked under the question: In what way the use of *Chatbot* can influence the learning process and development of life plan design skills in high school students of the UDG?

GENERAL OBJECTIVE

Evaluate the impact of using *Chatbot* in the classroom for the Life Plan Design learning unit at UDG.

SPECIFIC OBJECTIVES

- Identify student perceptions of the usefulness and effectiveness of *Chatbots* in learning life plan design.
- Analyze how the use of *Chatbots* influences student participation and engagement in the learning unit.
- Explore possible improvements and adaptations needed in the implementation of *Chatbots* for teaching life plan design.

THEORETICAL FOUNDATION

The theoretical framework of this research is based on several areas of study that support the integration of educational technologies, such as *Chatbots*, in the Teaching-Learning process of Life Plan Design at the University of Guadalajara. According to Siemens (2004), connectivism emphasizes the importance of learning networks and access to information through technology for the development of competencies in digital environments.

Furthermore, Johnson, Adams, and Cummins (2017) argue that learning is facilitated through social interaction and support from the environment, suggesting that the use of *Chatbots* could promote collaboration and knowledge sharing among students. Also, according to Hmelo-Silver, Duncan, and Chinn (2013), constructivist learning emphasizes the importance of active construction of knowledge by the learner, suggesting that *Chatbots* could provide opportunities for exploration and discovery of concepts related to life plan design.

LIFE PLAN DESIGN

On the other hand, the literature on life plan design and personal development has highlighted the importance of providing guidance and support to students so that they can set clear goals and develop skills to achieve them (Bronfenbrenner, 2011; Super, 2012), suggesting that *Chatbots* could be an effective tool for this purpose.

It refers to the process by which individuals identify their goals, values, interests and skills, and plan concrete actions to achieve their personal and professional objectives over time. This concept is intrinsically linked to the personal and academic development of students.

The design of a life plan involves the creation of a set of goals, objectives and actions that a person intends to achieve throughout his or her existence. This plan serves as a guide to orient decisions and behavior, and can

encompass personal, professional, educational, family, and other aspects. Some common steps in designing a life plan include visualization of the desired future, self-analysis, identification of values, establishment of objectives, definition of a time frame and determination of concrete actions to achieve these objectives.

The life plan is an important tool for planning the future, knowing oneself better and knowing where one wants to go. It allows establishing short, medium and long term goals, and can be adapted to different areas of life, such as academic, work, family, emotional, spiritual, among others. By building a life plan, it seeks to align actions with personal values and interests, and encourages reflection on the role of other people in life.

EDUCATIONAL TECHNOLOGY

According to Cueva Gaibor, 2020, "ICTs are no longer just technological tools in education, but become one of the basic competencies to be developed in the teaching-learning process" (p. 342), hence for some authors educational technology is "a key element to promote a more inclusive and equitable education, providing all students, regardless of their location or socioeconomic context, equal opportunities to acquire knowledge and skills" (Arbañil Rivadeneira, et al, 2023, p. 7).

Educational technology can be defined as the set of methods, tools and resources used in the teaching and learning process in order to promote greater student participation and collaboration, while developing skills that enable students to face current challenges (Arbañil Rivadeneira, et al, 2023; Cueva Gaibor, 2020). Some of the benefits offered by educational technology include creating inclusive, engaging and personalized learning experiences, improving access to educational resources, digital content and interactive platforms, and preparing students for the demands of the modern world.

It comprises the use of technological tools, such as *Chatbots*, with the purpose of improving teaching, learning and educational management. Educational technology seeks to effectively integrate technology into teaching and learning processes to optimize educational outcomes.

In the context of high school education, several studies have demonstrated the potential of educational technology to enhance student learning (Prensky, 2019), which supports the relevance of investigating the impact of *Chatbots* on this specific student population.

Artificial intelligence (AI) in education reveals a dynamic and promising landscape in education. Several researches have explored the integration of AI in teacher training and in the Teaching-Learning process. Ayuso-del Puerto and Gutiérrez-Estebas (2022) highlight the importance of analyzing the perceptions of pre-service teachers on the use of AI in their training process and its impact on learning. The results suggest that AI enriches learning environments and motivates students to use technologies effectively.

In addition, bibliometric research such as that conducted by Del Campo, Villota, Andrade and Montero (2023) highlights the growing attention to disruptive technologies in education, such as AI and robotics, which underlines the relevance of these technologies in the academic community. Sanabria, Córdoba, Silveira and Pérez (2023) delve into the incidence of AI in contemporary education, highlighting the central role of students and teachers in this process. The state of the art emphasizes the need to understand the evolution of AI in education and its potential to transform learning.

This reflects the growing interest and expansion of artificial intelligence in education, highlighting its potential to enhance learning, promote student engagement and provide new opportunities for teacher training. This rese-

arch points out that AI not only enriches the educational process, but also poses ethical and practical challenges that need to be addressed.

Understanding this context is critical for educators and education professionals in the digital age, as AI will continue to play a central role in the evolution of pedagogy and learning. This lays the foundation for future research and reflections in the field of artificial intelligence and its influence on education, as there is little research on the application of AI in academia, especially with adolescents, so it is considered that more empirical and critical research is needed to better understand the impact of AI in higher education and to address the concerns identified in this section, in addition to emphasizing that lack of deepening in ethical aspects and teaching competencies for the use of AI.

CHATBOTS

At the most basic level, a *Chatbot* is a computer program that simulates and processes human conversations (either written or spoken), allowing humans to interact with digital devices as if they were communicating with a real person, *Chatbots* can be as simple as rudimentary programs that respond to simple queries with a one-line response or as sophisticated as digital assistants that can learn and evolve to offer increasing levels of personalization as they gather and process information, *Chatbots* can provide automatic responses to common questions, offer information, guide users through processes and perform specific tasks, all in an interactive and personalized manner.

In education, mainly written conversational agents are being explored and experimented with. Some AI tools are already being used in classrooms. These *Chatbots* theoretically allow to personalize learning, adapting to the pace of each student, address specific student difficulties to build an inclusive education and support the teacher in teaching new subjects.

PERSONALIZED LEARNING

It refers to the adaptation of teaching and educational resources to the needs, learning styles, interests and individual rhythms of each student, personalized learning seeks to maximize the potential of each student and improve their learning experience, that is, personalized learning is a teaching-learning methodology that places the student at the center of the educational process, taking into account their interests, personal choices and individual characteristics, thus favoring their motivation and being transformed into an active agent and protagonist in their own learning.

This approach seeks to adapt to the needs, skills and interests of each student, providing a learning plan based on what they know and how they learn. It relies on the use of tools and technologies that allow adjusting the pace, focus and learning materials to the needs of each student, offering a more inclusive and personalized educational experience. Personalized learning is an educational approach that has the potential to reduce the stigma of special education and balance the focus on deficits by focusing on each student's strengths and interests.

STUDENT ENGAGEMENT

It refers to the active participation, motivation and dedication of students in their learning process. A high level of student engagement is commonly associated with better academic results and a more meaningful and satisfying educational experience.

Student engagement refers to the dedication, effort and active participation of students in their educational process. This engagement involves energy in action, where students dedicate time and effort to educational activities to achieve their academic goals. It is composed of affective, cognitive, behavioral and agency dimensions, and is considered fundamental to evaluate performance and prevent problems such as underachievement, boredom, failure and dropout.

Student engagement can be manifested through active participation in academic activities, respect for rules and regulations, positive interaction with peers and faculty, and perception of school as a meaningful place in their lives. In addition, student engagement is related to self-discipline, responsibility, class participation, effective communication, and active pursuit of learning opportunities.

METHODOLOGY

TYPE OF RESEARCH

The choice of a quantitative research design is based on the need to address the complexity and richness of the human experience in the context of the use of *Chatbots* in the Life Plan Design learning unit at UDG. Quantitative data analysis focuses on quantification and statistics, while qualitative data analysis focuses on deep and contextualized understanding of the phenomena studied.

RESEARCH METHODS AND TECHNIQUES

Surveys as Data Collection Instruments. Surveys will be used as a tool to collect quantitative data on student perception and experience regarding the use of *Chatbots* in the Life Plan Design classroom. These surveys will be designed in a way that allows for the collection of objective and quantifiable data on the effectiveness, perceived usefulness, and student satisfaction with the use of *Chatbots*.

POPULATION AND SAMPLE

The target population is composed of students enrolled in the learning unit of Life Plan Design at the UDG, from the Vocational High School, and High School 2, given that the population can be large and diverse, a representative sample of the different groups of students will be selected to ensure the validity and generalization of the findings. The population corresponds to 630 students from Preparatoria Vocacional and 540 from Preparatoria No. 2.

The sample was selected randomly to avoid bias in the selection and to ensure the representativeness of the student population of the 5th semester students of the general baccalaureate by competencies who are the ones who take that subject, so that the sample size was determined by strata, given that there are naturally formed subgroups (groups), according to the following formula:

$$n = \frac{N * Z_a^2 * p * q}{e^2 * (N-1) + Z_a^2 * p * q}$$

Where n= the sample size, N the population size which is a total of 1170 (630 from the Vocational High School and 540 from High School No. 2), Z is the confidence level which for this research has been determined at 90%, *e* is equal to the precision or error which corresponds to 6.1%, p= positive variable of 0.5% or p= negative variable with 0.5%. Thus, the sample consisted of 86 students from Vocational High School and 73 from High School No. 2.

DESCRIPTION OF THE PROCEDURE

Surveys were administered both before and after the implementation of *Chatbots* in the classroom, which allowed not only to evaluate the initial perception of the students, but also to identify changes and evolutions in their attitudes and opinions over time. The initial survey consisted of 10 closed-response items that focused on identifying whether students have used artificial intelligence, what they have used it for and whether they have considered the benefits of AI in their courses.

The second survey was applied at the end of the course, in order to identify, from the students' perspective, the usefulness and effectiveness of the *Chatbot*; the impact on learning and academic performance; their experience and satisfaction; as well as their motivation, participation and commitment to the cour-

se and their learning process once the Boot was used. This survey was structured with 25 closed questions structured on a Likert scale. The four categories of analysis: the usefulness and effectiveness of the *Chatbot*; the impact on learning and academic performance; their experience and satisfaction; as well as their motivation, participation and commitment to the course and their learning process once the Boot was used.

RESULTS AND DISCUSSION

The quantitative data collected through the surveys were analyzed using descriptive and inferential statistical techniques, which made it possible to identify patterns, trends and significant relationships between the variables studied.

The initial survey was processed with Excel and under the structure of descriptive statistics, since it was only applied as a survey. On the other hand, the analysis of the final survey was carried out with SPSS software, since it is necessary to work with descriptive and inferential statistics.

The survey was administered to a total of 158 participants, of whom 46.8% were women and 53.8% men (Figure 1). The initial survey consisted of 10 closed questions that probed the students' use of AI and whether they considered that this tool could optimize their learning in the courses.

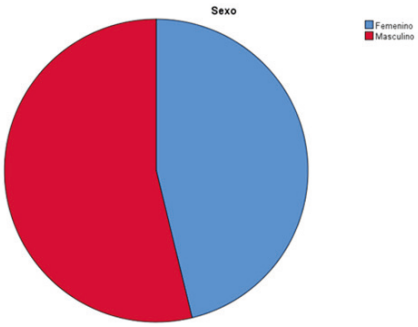

Figure 1: Gender

Source: Own creation

The results reveal an interesting picture about the perception and use of AI, about 84% of the participants have interacted with applications that incorporate AI in their daily activities (Figure 2). In addition, there is a clear positive trend towards the willingness to use Chatbots in vocational guidance through, highlighting the flexibility of respondents in adopting new technologies for this purpose.

Once the course was concluded, the final survey was applied, consisting of 25 closed--ended questions structured on a Likert scale. To facilitate the analysis, the items were grouped into four categories of analysis: impact on learning and academic performance (4 items); experience and satisfaction (4 items); motivation, participation and commitment to the course and to the learning process once the Boot was used (4 items); as well as usefulness and effectiveness of the *Chatbot* (13 items).

This analysis underscores the perceived effectiveness of the Rita Chatbot14 as a useful tool for improving student achievement in the specific context of this academic unit.

Figure 3 shows the comparison between the categories of analysis where 44.3% of the respondents considered themselves satisfied, while a remarkable 55.1% rated it as very satisfied with respect to the motivation, participation and engagement facilitated by the Rita Chatbot14. Regarding the perceived impact on learning and academic performance, 60.1% of respondents rated the impact as Very Good and 39.9% rated it as Good.

On the other hand, the perception of user experience and satisfaction with the Rita14 *Chatbot*, approximately 60% of the users evaluated the experience as Very Satisfactory and around 40% as Satisfactory. Finally, in the category of usefulness and effectiveness of the Rita14 *Chatbot*, the results show that 100% of the respondents expressed a favorable perception of the tool and the experience.

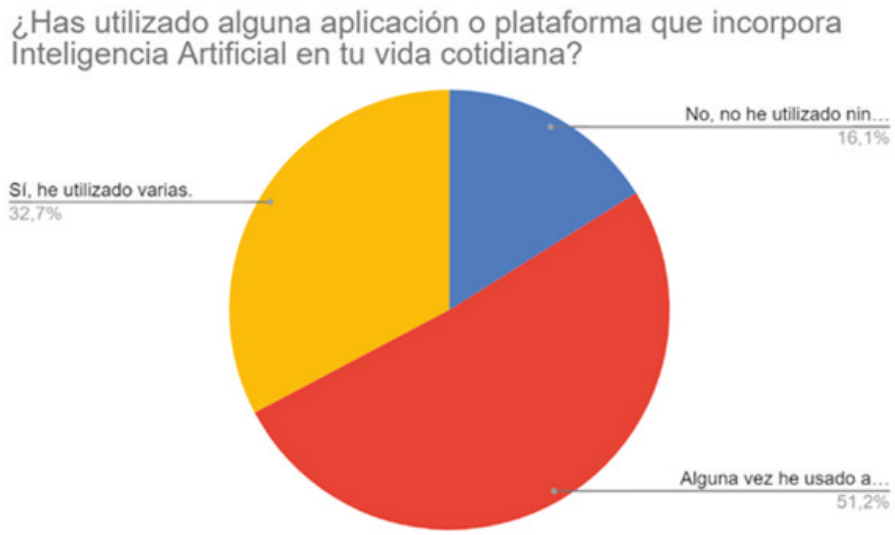

Figure 2: AI embedded in everyday life

Source: Own creation

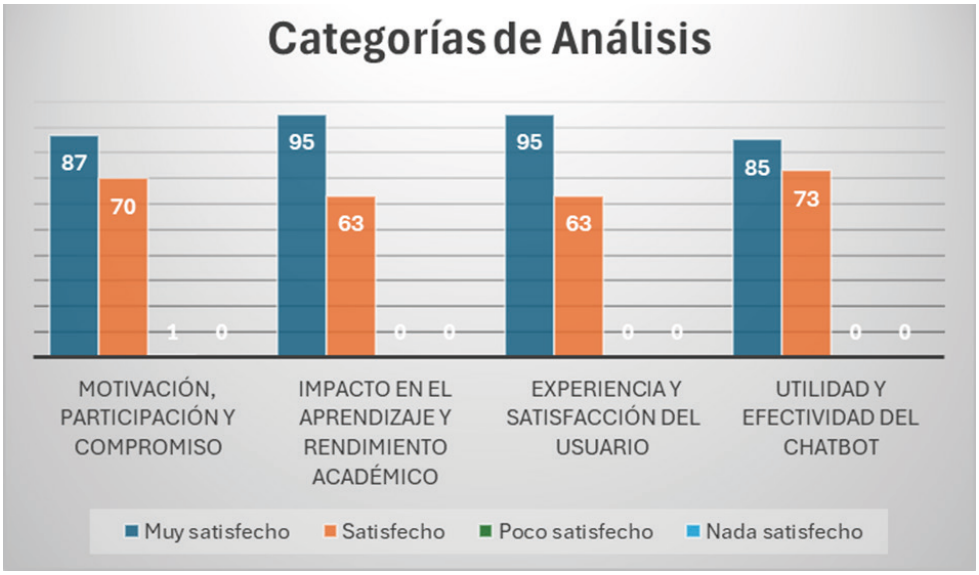

Figure 3: Comparison of analysis categories

Source: Own creation

		Impact on Learning and Academic Performance	User Experience and Satisfaction	Motivation, Participation and Commitment	Chatbot Utility and Effectiveness
Number	Valid	158	158	158	158
	Lost	0	0	0	0
Deviation		.491	.491	.512	.500
Variance		.241	.241	.262	.250

Table 1: Variance and Standard Deviation

Source: Own creation

The statistics presented in Table 1 summarize student responses in four key areas related to the use of the Rita14 *Chatbot* in the Life Plan Design learning unit. They provide a measure of the dispersion and variability of student responses in each of the categories assessed, indicating a detailed analysis of how the Rita14 *Chatbot* impacted learning, user satisfaction, motivation, participation, engagement, as well as its usefulness and effectiveness in the Life Plan Design learning unit.

CONCLUSION

The initial survey results reveal an interesting picture of the perception and use of artificial intelligence among the students surveyed. The majority of participants are familiar with the term "Artificial Intelligence," and a significant proportion have interacted with applications that incorporate AI into their daily activities. In addition, there is a clear positive trend towards the potential of AI to enhance learning and academic development, with a majority considering it beneficial to use these tools in the educational context.

Likewise, the willingness towards vocational guidance through chat bots shows considerable acceptance, highlighting the flexibility of respondents in adopting new technologies for this purpose. These findings suggest an environment conducive to the integration of artificial intelligence in the educational setting, although they also underscore the need to consider individual preferences in terms of the type of assistance they prefer to receive.

Regarding the results obtained from the analysis of the final survey, it is considered that they provide a comprehensive view on the perception and impact of the Rita Chatbot14 in the Life Plan Design learning unit. Overall, the data reveal that the majority of students positively rate the usefulness and effectiveness of the *Chatbot* in various educational dimensions. For example, it is observed that a significant proportion of students consider that the *Chatbot* has been very useful in resolving specific doubts about the design of their life plan and has contributed to their self-knowledge and personal reflection. In addition, many students express having experienced an increase in participation and engagement in academic activities due to the use of the *Chatbot.*

Overall satisfaction with the interaction and ease of use of the *Chatbot* is also notable, reflecting high levels of satisfaction among users. Despite some comments about integration with other educational resources and clarity in the implementation process, most students feel that the inclusion of the Rita Chatbot14 has been an innovative and valuable initiative for the learning unit. These findings underscore the importance of technology in today's educational environment and highlight the potential of the *Chatbot* as an effective tool to support personalized learning and students' academic and career planning.

Therefore, the use of the *Chatbot* is considered an effective didactic tool in the teaching-learning process, since it has demonstrated a positive contribution in academic performance with a high impact on its usefulness and effectiveness, since the participants consider that it improved the quality of teaching, their performance, as the respondents indicated that the use of the *Chatbot* significantly increased their participation underlining the effectiveness of the *Chatbot Rita14* in motivating and improving the involvement of the students during the development of the learning unit, which impacted their commitment to the learning process.

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