The Use Of Artificial Intelligence In Formative Assessment As A Teaching Tool

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This article studies the impact of tools that are based on artificial intelligence (AI) in formative assessment in the area of mathematics and language in basic education children, this article is the result of a broader study, carried out by teachers and students of the Popular University of Cesar, based on different experiences of success as evolution of learning processes based on the feedback obtained on numerous occasions. We hope that this article will arouse the reader's interest and motivation to introduce AI in the classrooms of education, both primary, secondary and university, in the future. For the preparation of this report, a qualitative methodology has been used, with an action-research design, which would imply a calm and leisurely analysis and reflection of the stages, actions and results obtained in the specific experience, and not of the more general aspects shared by the different experiences, being more direct towards teaching practice. Formative assessment tests are the most interesting for teachers, as they help them to focus on a small part of the content, reduce the time spent on correction, facilitate the immediate rectification of the teacher to adapt to the needs of the student, and teach in the sense that the feedback received can help the student to learn. Questions to the graphs take on special prominence in many of the formative assessment tests. Some of the methodologies used by entities and companies are based on AI and also use graphic questions, as they are interactive and reinforce the ideas presented. In later lines, we will talk about several real examples of AI in secondary and university education.

1. Introduction

Artificial intelligence associated with education is part of a recent and progressive field of research that is relatively embedded in the achievement of a new pedagogical paradigm, thus representing a potential opportunity for the improvement of training processes (Solórzano and Martínez, 2024). The appearance of these technologies in the teaching and learning process has provoked different reactions in the educational community, whose potential capacity for automation, control and monitoring has been translated into rigorous and individual ones, tailored to the student, and whose "great impact" will generate, therefore, fundamental differences in the current educational scenario. In this way, artificial intelligence has been fully incorporated into education; Examples such as automatic tutorials, tutorial systems in

multimedia environments with distributed hypertext and hypermedia and training through the use of virtual reality systems would be examples of some of its many applications. It is no longer conceived, only, as a "new learning model". It is a new model of learning in which teaching, too, must be approached in a different way. Currently, students are more heterogeneous; they differ from each other in their motivations, emotional maturation and prior knowledge. Distance education and the different models of teletraining have weakened the role of direct teaching, mainly due to the incorporation of self-learning by the student and the decrease in interest towards the teacher's presenteeism to focus on didactic accompaniment and coordination of student learning. Its use enhances the autonomy of the student (Casquete-Tamayo & Mendoza).

1.1. Context and justification of the study

Teaching mathematics and also language is not an easy job, since these are two areas that are usually difficult for primary school children. In general, learning problems begin to manifest themselves in terms of the acquisition of logical-mathematical and expressive-linguistic knowledge with the incorporation of new learning such as reading (Ludeña-Carrillo and Zambrano-Acosta, 2022). In other words, it is not enough to only know how to read; It is essential to be able to understand reading. In this sense, we must say that all students must know how to face the different situations, both academic, which they will encounter in their school life, and also in the different facets of life, both as children and in the future roles of young people and adults. Not all students learn in the same way and at the same speed. One of the functions of the teacher is to observe the rhythm of each of their students, attending to them individually through a more personalized class. However, the difficulty arises when the teacher is not able to sufficiently plan the teaching so that each of his students manages to reach his or her potential level. In this sense, one of the most feasible tools for the teacher is the establishment of formative assessment procedures that allow a better understanding of the difficulties of each student in order to design specific educational strategies (Villa & Avendaño, 2022).

1.2. Research objectives

The main objective of our study is to investigate the comparability relationship between the evaluations carried out from a web platform using artificial intelligences and the performance obtained in the tests carried out by the Ministry of Education and the mathematics and language tests. The comparability relationship refers to the equality of product evaluations in terms of performance and, in this case, validation in mathematics and grammatical cycle of evaluations via web with the SIMCE, applied to our context. In the different evaluations aimed at the application of the SIMCE, the results achieved since the current curriculum was established are highlighted, clarifying the situation of learning achievement for the educational establishment, identifying the strengths and weaknesses of the levels of achievement in the different areas of pedagogical management and designing an institutional improvement plan to overcome the deficiencies detected in the performance of its students (López et al., 2023). With this in mind, our research, using a sample of students from different establishments in

the city of Valledupar, will investigate the methodological feasibility of the unknown educational establishment. We identified as a relevant contribution to be able to compare the results that the school achieves with a different evaluation, not only in terms of results, but also in decision-making on improvements in pedagogical practice.

2. Theoretical framework

Formative assessment is aimed at providing valid and reliable information for the regulation of student learning during the course of the educational process and is closely related to the evaluation procedures used to collect data. Data processing refers to the collection, storage, elaboration, and presentation of the information collected during the evaluation processes carried out during the progress of the teaching units, in which different mechanisms and techniques are used (Alarcón García, 2021). Formative assessment collects two types of data: hardware, feedback on how much and how the execution is, and criterion, information about the student in the assessment level related to the hardware. In conclusion, data is the pillar on which the effectiveness of the feedback provided by the teacher is based; In this way, they will be more concrete and accurate if they are based on objective analytical and comparative data. On the other hand, technology in education offers certain advantages in the collection and processing of data to the extent that it is derived and processed in a more objective way and, indirectly, the coverage and effectiveness of the feedback provided is increased (Acuña et al., 2022), (Hidalgo Silva et al., 2023). The design of the Hots. The techniques based on the openness to the participation of telematic platforms allow a self-learning scenario, a thesis that is reinforced by the use of the so-called intelligent tutorial systems. However, and despite the fact that their educational potential is very high, it has been shown that their use has a very significant influence on students' perception of them.

2.1. Fundamental concepts of artificial intelligence

The term artificial intelligence (AI) refers to the use of computers to solve problems that are, in one way or another, solvable using human intelligence. This term has been used on several occasions in the pedagogical literature, in some cases in a confusing way, to describe applications focused on the design of simulations for learning, the development of intelligent tutorial systems and other multimedia educational resources, without taking into account AI components such as expert systems. neural networks, knowledge-based systems or physicomathematical approaches for the study of perception and learning. The term AI was coined during a conference held in November 1955. This author is credited with the creation of the AI discipline, with the aim of ensuring that computers had a two-dimensional representation, objects could be captured in an image of the retina, the platform could be portable, communicative, reasoning, sensitive and capable of recognizing objects and responding effectively to stimuli (Peláez, 2023).

AI is a discipline whose objective is to try to make computer programs behave in a way that, if it were done by human beings, we would say is the result of intelligent thinking (Marcial & Gomes, 2022). A system is intelligent if it exceeds the logical-mathematical,

language or perceptual capacity obtained if we were to perform the same system using deterministic algorithms. To program the decision-making of AI systems, we do not use the design techniques already seen of top-down or run-run. We do not say how the decision should be made, but from concrete examples of situations, general rules are drawn up.

2.2. Formative assessment: definition and objectives

The concept of formative assessment appears immersed in that of continuous assessment (Lalinde López, 2024). Over time it has also been called self-assessment, diagnostic assessment or innovative assessment. Continuous assessment aims to obtain constant information on the progress of the students and to know the degree of acquisition and assimilation of the content that is being taught. This data will provide the necessary information to take snapshots of the learning process and thus, the teacher will be able to make instant decisions based on the results of the tests or exercises. The most important thing is to make early decisions that allow us to intervene in the process to improve results at all levels. This consolidation is precious in the acquisition of learning. On the other hand, if the teaching staff detects those students who have not assimilated what they have taught, they will be able to attend to the former students involved in a higher level of learning. Also, it is remembered that the format is part of continuous learning and that it is a form of control of it. Deep learning is achieved by relating new knowledge to the information acquired in the previous phase of the learning process, whether formally acquired with other previous knowledge. An important aspect within the process and, therefore, in formative assessment, is the work of the students prior to the presentation of the contents. Thus, the previous work of the students will be a key task within the learning model and, therefore, within the formative assessment itself.

2.3. Applications of artificial intelligence in education

Artificial intelligence has made significant progress due to advances in data processing and storage capabilities. These advances, together with current needs in education, have allowed problems related to the diagnosis, adaptation, personalization, evaluation and guidance of students and teachers to be addressed. This is how artificial intelligence, supported by knowledge-based systems, intelligent tutoring systems, and systems that teach critical thinking, becomes one of the current fundamental paradigms of education (Sanabria-Navarro et al., 2023). In this area, the fundamental advances that have made these tools a reality have been technologies based on text-producing systems and adaptive assessment systems.

The application of artificial intelligence to the evaluation and diagnosis of students was carried out in different systems based on these technologies, which sought, among other purposes, to offer support to the pedagogical model proposed by the educational system, to define a multimedia computational environment, to achieve a degree of realism and didactic effectiveness, and to improve the process of evaluating the user's knowledge through the use of appropriate techniques. One of the applications of machine learning is in education, since artificial intelligence can be conceived as the discipline that seeks to automate the mining of knowledge in databases, allowing the design and development of systems that use stored

knowledge to, among other things, model learning and act as tutors for computer-assisted training.

3. Research methodology

The present research has an applied type and design. The research is quantitative, non-experimental, correlational, with an explanatory scope. The binary classification model with Markov strings and word bag will be used, which is represented by an algorithm with Markov sequence tag training, along with a method to label each word in the text with two possible categories (Jiang, 2023). In addition, a good instrument must meet six criteria. A good instrument is one that clearly measures what it intends to measure. It responds to the calculation of practical indices or coefficients of reliability and validity. Explains whether the measurement carried out through the instrument allows normative judgments to be made and then performs the interpretation calculated for normativity. It provides consistent and meaningful results based on its indices or coefficients. It provides effectiveness, efficiency, validity and reliability with respect to the theoretical bases on which it is based. It examines the validity and reliability of the instrument if it has been used in different sociocultural contexts.

Research is non-experimental because a measurement is made that is not manipulated. It is correlational, since the objective is to establish the relationship between the variables evaluated and how text processing is carried out will be described (Rueda et al., 2020)(Berrocal et al., 2022). In general, in word processing, the text is taken, fragmented, and the fragments are stored as data. Then we proceed to extract information and apply metrics, finally seeking to interpret the results. For this purpose, the techniques will be used. Among the possible processing activities of a text are the placement of words, phrases and sentences in their corresponding places. The identification of these activities and how they can be implemented is a very active research topic today, with the development of increasingly sophisticated systems for text processing and analysis.

3.1. Research design

In this research article, a quantitative approach was adopted to respond to the research interests related to "determining whether there are significant differences in the results of formative assessment in relation to the performance obtained; And if there is a significant difference, how much impact would it have on student achievement?" The sample of this research, a single case study, consisted of all (n=88; forty-four of Mathematics and forty-four of Language and Communication, from levels 3 to 8 of basic school) of the regular education students enrolled in March 2022. By means of a non-probabilistic sampling, all students who met the above criteria were selected and it was decided to also consider the gender of the students, resulting in a sample of 47 women (53.41%) and 41 men (46.59%).

The study focused on the application of artificial intelligence as a proposal for formative assessment in two subjects: Mathematics and Language and Communication,

seeking a change in methodology and a new assessment of the learning process, fundamental aspects for the best performance of students. In this sense, it is noted that artificial intelligence has evolved in an era of computer technology to assign skills to students, facilitating the monitoring of progress over time, while traditional ICT environments have not offered students authentic opportunities to make decisions and act in an evaluative way when working with ICT.

3.2. Sample selection

In this work, we worked with students from third to eighth grade, around the ages of 8 to 14 years. These levels were selected following indications from the Colombian Ministry of Education, which asks the country's schools to incorporate computational thinking skills in planning starting from the earliest grades. The population from which the sample of this research was extracted is detailed below:

- Prudencia Daza: A co-educational institution, it teaches classes from preschool to 11th year of basic education, that is, it serves students from 5 years old to 17 years of age. At the socioeconomic level, it is considered a lower-middle school school. –Manuel German Cuello: This educational establishment is of a mixed nature, serving students of preschool, elementary and middle school (from 5 to 17 years old). The sector in which the school is immersed is residential, The school continues to be of medium-low social stratum. The students come from different sectors of Valledupar in the case of the two institutions.

3.3. Data collection and analysis

In addition, to apply the measurement of achievements, we have collected a normative aspect that directly influences this research. According to the Regulations on Student Evaluation and Promotion, in section I: "Evaluation is conceived as a comprehensive, systematic and cooperative process that studies the relationship that exists between the achievement achieved by the student in order to make decisions aimed at the continuity of teaching", legitimizing, in a certain way, the use of mobile applications that help to remove a significant workload from the teacher and deliver information on the prompt and timely manner to the representatives about the performance of their constituents. In section II of the same regulation, on grading and evaluation, it is clarified that the teacher in charge of the course establishes these aspects. Based on this, the correct use of the mobile application for the school leveling cycle benefits the teacher, by facilitating the collection of information on the achievements achieved by each student and immediate reports to those who have the degree of responsibility of the respective child, so that they can investigate the whys and wherefores that arise if the performance does not meet expectations.

To compare means "to determine the similarities and differences between two or more elements", such as: a procedure, two phenomena, two individuals, two determinations, among others. Therefore, inferential statistics are used to support comparisons made when researching or evaluating the performance of schoolchildren. Therefore, when two sets of data or

distributions are received that allow them to be compared with the different types of statistical tests, we speak of inferential statistics. In this text, the conclusions of the research in question will not be based exactly on the data obtained from the groups with which the results obtained with the use of AI will be compared, since they will not be part of the results of the research, but will be carried out through the use of existing information about the cognitive performance of children who are at the same level educational than the participants and that meet profiles similar to those that students of the institutions in which the school leveling cycle will be applied.

4. Artificial intelligence in formative assessment

Evaluation methods are essential to guide, verify and improve the training process. Similarly, pre-assessment guidance, understood from a constructivist point of view, has a more responsible function than when the decision is made provisionally (Tamayo Mendoza & Menacho Rivera..., 2023). Two ways, the most used, that the evaluation exhibits are quantitative and qualitative. The first typology is assigned tests of a generalist nature to obtain grades and indicators of a certain characteristic or behavior in a uniform way in all cases. However, refuting the first, the qualitative one proposes a detailed analysis of results that reveal conceptual errors of the students or other differences, such as motivational ones.

The use of high technology in education regulates change, facilitating explicit problem solving and adapting to the needs of each student; one of the typical computational models of this is known as artificial intelligence, which has completed the development of representations of knowledge (Cruz, 2023). Its objective is to implement a value judgment in the field of automatic evaluation and it has not only been extended in the academic field, but also in the workplace. At present, he controls a part of the acquisition of knowledge from the edition of some curricular materials from mathematics and linguistics.

4.1. Natural Language Processing Techniques

Although techniques and developments in the discipline of artificial intelligence make it possible to create increasingly specialized and precise algorithms, natural language processing techniques and methodologies become a determining and conditioning aspect (Sancho Escrivá et al., 2020). Among them are: grammatical labeling; the recognition of named entities: location, people; of temporal events, recognizing key terms and their meaning, etc.; sentiment or opinion analysis; the automatic summary; grammatical and semantic analysis; information extraction; dialogue systems; grammatical correction, among others. However, currently artificial intelligence has not reached the level of human beings when it comes to accuracy in the general knowledge that governs everyday language. In addition, there are difficulties in giving a precise definition of language that prevents ambiguities in the rules.

The success of automatic natural language processing is the concretization of the language model that develops a physical or logical programming, where the first thing that the "tradition" is refined by means of a strategy that follows clearly defined steps, which enables

a rapid processing of the information obtained. Research in natural language processing has followed a double direction: on the one hand, interactive systems with the Shell-type user, and on the other, the autonomous development of automatic reading and understanding of natural language.

5. Impact of artificial intelligence on formative assessment

The use of artificial intelligence in education means that we are developing our focus on two very general fields of artificial intelligence: machine learning and natural language processing (Martínez-Comesaña et al., 2023). Both fields currently provide us with a large set of resources and possibilities to use our hypothesis in a technical and automatic way. In this framework, we propose to develop an automatic, objective and immediate assessment model of the natural language formed by the student in the areas of mathematics and language, based on the automation of verbal tasks and the automation of logical knowledge tasks.

Initially, artificial intelligence approaches in formative assessment usually consider three assessment objectives: diagnosis, action format, and knowledge reporting. The impact assigned to artificial intelligence applications is on feedback, on the information that is provided to the student without, therefore, specifying the registration and diagnosis of the system on which this feedback is based in the content database, most of the works analyzed. The student's diagnosis is usually simple since it is based on the lack of data in a certain line of evaluation, since a small set of quantitative data is usually required to propose the items assumed by this type of research from which to extract performance classifiers based on simple machine learning techniques after training.

5.1. Potential benefits

Based on this reflection, we recognize certain potential benefits of formative assessment software for various areas. In areas related to cognition, different studies highlight the influence of prior knowledge and the effort that students make on learning processes. Thus, the possibility of having different types of immediate feedback opens up a wide range to improve the quality of students' learning, encouraging the activation of procedures for recharging prior knowledge and strategies for self-regulation of learning. Along with this, the space for risk-taking and the organization of immediate feedback could support a freer development of metacognition and encourage a more reflective, organized and conscious look at the efficiency and validity of each of the self-regulation strategies they use, which would possibly have a direct impact on the development of this field. In terms of the development of reading skills, it is proposed that the use of AI would offer an opening to improve the quality of practical essays, corroborate the different calculations carried out with greater veracity and deal with possible cognitive biases. To these factors, we will add the possibility of reducing the feelings of loneliness or frustration that the student perceives in the reading section of the journey, since the active user of the software becomes, in a certain sense, a social agent that accompanies him and facilitates progress in his learning. Thus, and in the field of reading comprehension, AI would be built to interpret messages and interact as social agents.

Both lines of work have highlighted the importance of supporting the evolution of the various skills that involve reading and writing skills, paying attention in the reading field, for example, to phonological awareness, to the fine discrimination of the various graphemes, and to syllabic reading ability until the vertiginous process of reading lexical syllabic graphemes is reached. Thus, the possibility of having at the click of a button a visual range of different collections of words that are activated in coordination, without the risk of alerting unwanted graphic patterns, as well as the effective training of the aforementioned syntax in the program. Finally, the research hypothesis suggests significant advances for an experimental intervention group with the specific program; Thus, in this contribution, we propose certain educational guidelines as future work with each experimental group of teachers to intervene, in the specific presentation of their training program.

5.2. Challenges and limitations

Found in research on applications of artificial intelligence to education. This challenge includes concerns about authorship and control of artificial intelligence, shifting the educational impulse for students from active to passive learning, and fostering immature user experiences.

It has been mentioned that the recommendations of intelligent agents to students could harm the self-learning that they list at the beginning of the text. Finally, this study does not propose a motivational strategy for students. The theory of self-determination states that people's motivation is propelled through a continuum from the absence of internal motivation to the presence of self-motivation, and this is divided into intrinsic and externally regulated motivation. Promoting intrinsic interest is critical to effective and deep learning. LD affects many areas of learning and it is unreasonable to expect that it can reverse the impact of poor teaching. In addition to good quality content and coverage, academics are interested in how well learning is being done. Teachers are interested in learning about the problem areas of a topic and which students need help or are falling behind.

6. Case Studies

The present research focuses on the analysis of the data obtained from the diagnostic tests applied, specifically the Quantitative Analysis Questionnaire, which yielded a score of 19.86, and the Qualitative Analysis Questionnaire, which presented a score of 18.29. Based on these results, contingency tables were developed in order to compare the global scores and those corresponding to the categories that show greater difficulties within the ELM classification model. Given the diversity of results observed through the use of artificial intelligence in the evaluation process, it is necessary to investigate the advantages that this model could offer in the educational field, as well as the methodological limitations that could arise. Through the analysis of the different studies reviewed and the discussion of the findings, it can be concluded that the application of artificial intelligence in text analysis opens up various opportunities in the creation of educational materials and in their evaluation. In particular, the corpus developed for this study reflects these advantages, having collected a significant

amount of fundamental data that must be considered. For example, the automatic assessment is based on the texts analysed through machine learning techniques, and, according to an exhaustive study carried out through process analysis, all the correction guidelines that teachers can use to carry out a bibliometric analysis in the correction of these texts, as well as in the development of the content consistency questionnaire, are presented. Among the various methodologically supported applications, all the anomalies that have been detected are pre-registered, thus guaranteeing a more rigorous and effective evaluation process.

6.1. Specific applications in mathematics

The study is based on an assessment model in which the language skills to be taken into account when carrying out the final assessment of the student are taken into account. It is pointed out that the diagnostic evaluation considers mechanical for the student because the objective is not finalized, but when the software asks a question of this type, the student perceives his intention better and the activity is more effective. The usefulness of the tool to understand the "spelling errors of competence" and, therefore, the mistakes that are made not because they do not know the concept, but because of a mistake of mere writing, is shown. The diagnosis of students' language difficulties involves the proposal of specific activities.

The work develops a specific application for the assessment of calculation skills, as part of the online learning system. It is worth highlighting the tools; Based on the previous models, they created the authoring tool, integrated into learning environments for the creation of questionnaires with mathematical activities added with an advanced inference mechanism, monitoring and adapting the student's learning to their answers.

6.2. Specific language applications

Reading comprehension is an essential tool for learning in all areas. The Plidar platform, a software that develops artificial intelligence, automatically produces objective rubrics in order to improve the grade and provide the teacher with additional reports. In relation to language, a pre-existing tool will be used, only to propose additional questions to Plidar. It is a study technology platform that stimulates the development of lifelong learning by combining proven techniques of spaced memorization, retrieval with reminders, and competency-based grading. The program is based on technology that is based on: Feedback, Functions, Forms, Flexibility. In this sense, the platform's artificial intelligence would take curricular information and design a personalized course for a student who needs to improve reading comprehension skills. The tool that will be used is a web application mainly for the performance of word identification activities; however, it incorporates a series of activities that contribute to learning and formative assessment within a didactic sequence. In the same way, these disciplinary activities are automatically corrected in individual records, so the analysis would focus on the worker's results, which would also serve individual evaluation in the classroom through peer feedback from colleagues.

7. Conclusions and recommendations

Throughout this literature review, evidence has been presented that suggests that artificial intelligence is in a position to be used as a tool in formative assessment. It has been argued that its technological development, theory and pedagogical use allow it to be used in learning classrooms. This is confirmed by presenting some studies in order to show that theoretical, methodological and instrumental factors have contributed to its use.

However, it is necessary to emphasize that there are still some drawbacks or disadvantages of artificial intelligence that need to be solved. It has been stated that some of the most recurrent factors are the lack of identification between the use of a particular software and the software that best suits their needs in the environment to be used, the economic factors that fall on its acquisition and the lack of pedagogical knowledge on how to implement it. However, it has been shown that these problems can be solved based on an adequate analysis of the needs of the individual or institution. From this, it is possible to select the appropriate software, its appropriate curricular linkage and the necessary investment of resources for its use. Finally, some recommendations will be made on how to promote the use of artificial intelligence in formative assessment processes with emphasis on the areas of mathematics and language, at the curricular, institutional and governmental levels. To this end, the use of ICT in the classification of competencies, the benefits of its use and implementation will be explained.

7.1. Synthesis of findings

Regarding the tools developed in AI that are included in this study, they have been mostly used for the evaluation of mathematics. As for the use of AI assessment in the area of language, there is an increase in the use of tools compared to those manifested in mathematics assessment. Within the areas of formative assessment, assessment as learning and assessment for learning were found. The area of development of mathematical skills in assessment as learning through problem solving has been the most included with 42.9%, compared to the area of skills in written comprehension and production as a language assessment with 25.7%.

Among the main findings regarding formative assessment, it is pointed out that the intelligent systems used as tools are AI techniques that provide pedagogical support to improve and monitor the learning process. They allow the environment to reverse the conventional teaching environment based on a succession of exposures sufficient for students to penetrate the complexity of the conceptual domains that are being requested. As an example, during the work on the development of the tools used for planning and construction systems, it was noticed that teachers focused on secondary issues in their teaching and the project plan, resulting in a deficit in instruction. In the tools developed for this purpose, substantial efforts have been made to offer a dialogue of high pedagogical quality, both in the development of systems of representation of knowledge and in the dialogues that the teacher maintains with the user to carry out the instruction.

7.2. Recommendations for future research

It is recommended to carry out research on formative assessment at different educational levels, that is, from initial education to higher education. This research is of utmost importance to analyze whether the use of AI in formative assessment should be carried out in all areas or in specific areas, that is, if it is convenient in mathematics and language skills, even in more specific areas such as science, social sciences, among others. Similarly, it would be interesting to carry out comparative studies between these areas to analyze whether there are differences in the different areas of knowledge. Additionally, it is proposed to analyze both students from public and private educational institutions to determine if the use of AI in these areas will depend on the type of educational institution.

It is also suggested to know and analyze the different educational platforms in which students find themselves, to establish if the use of AI in formative assessment depends on the application used by the student, and finally to analyze if the use of AI, as a formative assessment strategy, depends on the type of user. because we know that there are different audiences, that is, from initial education to higher education. A lot could be contributed with the development of research that develops or structures an artificial intelligence algorithm under the Moodle platform. After this, the feasibility of being able to implement it in the classroom could be analyzed and the percentage of learning contributions could be analyzed.

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