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The revaluation of traditional research versus Artificial Intelligence in the generation of knowledge in the XXI century in Ecuador

La revalorización de la investigación tradicional frente a la Inteligencia Artificial, en la generación de conocimiento en el siglo XXI en el Ecuador

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Abstract: The creation of Artificial Intelligence is one of the greatest achievements of the present century, where its benefits constitute a reliable and truthful tool for the management of the great information existing in the world data network. Faced with the technological benefits it possesses, traditional research has its preponderant place in the generation of knowledge in the XXI century, since it constitutes the personal seal of the researcher, being able to know facts and phenomena that have only been defined in the problems encountered, so its value lies in the amalgamation with Artificial Intelligence complementing each other, as well as exploiting the potential of each for the generation of knowledge, innovative ideas, and solutions to problems in the learning environment. In Ecuador, a country with little investment in education, as well as having a youth with a great acceptance of social networks and its great dependence on technology and the various applications in the global data network, makes AI a key element to enhance cognitive processes, so as the main result of this work, it is exposed as AI has maximized traditional research in basic general education, high school and university; while the main conclusion mentions how specific activities can be established by the Ecuadorian teacher-facilitator, which revalue the traditional research supported by the benefits of AI, establishing its limits of application for the achievement of the objectives of each work or assigned task.

Keywords: Artificial Intelligence, traditional research, teacher-facilitator, knowledge generation, learning process.

Resumen: La creación de la Inteligencia Artificial constituye uno de los mayores logros del presente siglo, donde este por sus bondades constituye una herramienta fiable y veraz para el manejo de la gran información existente en la red mundial de datos. Frente a las

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bondades tecnológicas que posee, la investigación tradicional tiene su sitial preponderante en la generación de conocimiento en el siglo XXI, puesto que constituye el sello personal del investigador, al poder conocer hechos y fenómenos que sólo se han definido en la problemática encontrada, por lo que su valor se encuentra en la amalgama con la Inteligencia Artificial complementándose mutuamente, así como también explotando el potencial de cada una para la generación de conocimiento, ideas innovadoras, y soluciones a problemas en el entorno de aprendizaje. En el Ecuador, país con poca inversión en educación, así como el poseer una juventud con una gran aceptación a las redes sociales y su gran dependencia a la tecnología y las diversas aplicaciones en la red mundial de datos, hace que la IA sea un elemento primordial para potenciar los procesos cognitivos, por lo que como principal resultado del presente trabajo, se expone como la IA ha maximizado la investigación tradicional en la educación General Básica, Bachillerato y Universitaria; mientras que la principal conclusión menciona como se pueden establecer actividades específicas por parte del docente-facilitador ecuatoriano, que revaloricen la investigación tradicional apoyada por las bondades de la IA estableciendo sus límites de aplicación para la consecución de los objetivos de cada trabajo o tarea asignada.

Palabras claves: Inteligencia Artificial, investigación tradicional, docente-facilitador, generación de conocimiento, proceso de aprendizaje.

Introduction

The different technological advances of the 21st century have allowed that access to information is no longer a privilege of a few people, which has facilitated the understanding of all fields of science in various ways, aided by the benefits of the different multimedia applications that exist, being the common denominator that an active understanding of all knowledge is achieved in the shortest possible time.

Due to the fact that advances in the sciences are developing by leaps and bounds, since the COVID-19 pandemic, the creation of Artificial Intelligence has become the greatest achievement in the digital world, thanks to the multiple applications it has for recreation, science, studies and the generation of knowledge, being its constant evolution in all the mentioned aspecAr, thus allowing Quinde, 2023)ts (évalo &

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Quinde, 2023) its integral use in all aspects of society, being massively employed by commercial companies, as well as educational centers at all levels. , thus allowing its use in an integral way in all aspects of society, being massively used by commercial companies, as well as educational centers at all levels.

One of the applications that are in vogue for Artificial Intelligence is its use for the generation of knowledge, and specifically in Ecuador, the massive use of the Internet, social networks and other online applications for education is quite accepted, which is why the use of Artificial Intelligence for the execution of academic work has become a help to students in the Ecuadorian environment.

Despite this, there are still many questions about the benefits of Artificial Intelligence (AI), since traditional research does not lose validity, since it is still a safe, verifiable, measurable and truthful way to obtain information, as well as it offers to feel realities regarding the acts under investigation, actions that Artificial Intelligence is not able to perform since it only analyzes documents or existing activities in the global data network.

Now, what happens when artificial intelligence is used excessively, what are its risks in the cognitive processes in students in Ecuador, how to conduct a comprehensive research in a society like Ecuador with low levels of reading and massive use of social networks, how does the use of artificial intelligence affect critical thinking and comprehensive analysis in children and young people for the construction of knowledge? How does the use of Artificial Intelligence affect critical thinking and comprehensive analysis in children and young people for the construction of knowledge? In the face of these questions it is necessary to find answers adapted to the reality of education in Ecuador, which is influenced by several factors such as dependence on social networks, which is used even for political purposes, and the lack of a comprehensive reading culture in children, youth and adults.

With the exposed problematic it is necessary to analyze how the massive use of Artificial Intelligence in the present century, drives the generation of knowledge in Ecuador, compared to the traditional methods of research still in force, taking into consideration that there is no formal research in Ecuador on the results of the use of AI in scientific research, which allows access to reliable and concrete data in all areas of knowledge; where to analyze the exposed problematic, we will obtain information from open sources, by means of a

qualitative research, using the deductive and inductive method, seeking to revalue the traditional research in harmony with the massive use of Artificial Intelligence.

Methodology

The benefit of the use of Artificial Intelligence in the generation of knowledge in the 21st century.

In view of the great amount and volume of information existing in the world data network, as well as the constant updating of computer applications and the digitalization of knowledge, which has led to the gradual disappearance of traditional reference books, as well as the great encyclopedias of yesteryear, it was necessary that the current technology allows a discernment, classification and management of existing information on the Internet to generate knowledge, either by second, third and fourth level students, and professionals in different areas, since the production and research, constitutes a modern competence that must be acquired by second, third and fourth level students and professionals in different areas, It was necessary that the current technology allows a discernment, classification and management of the existing information on the Internet to generate knowledge, either by students of second, third and fourth level, and professionals in various areas, since the production and research, is a modern competence that must be acquired by all professionals who wish to exercise their work in constant ascent. (Vásquez et al., 2021)

Therefore, the competence in information management, in a globalized and changing world, where knowledge and sciences evolve, can only be acquired through the use of computer tools which allow its classification and verification with the help of Artificial Intelligence, which is its greatest benefit, based on the characteristics it possesses, and according to the programming or commands that can be configured in its prompts.

One of the benefits offered by AI is the idiomatic correction or the generation of text from ideas, actions that reduce considerable time for those who handle, classify and verify information (Morales, 2023) , since it allows them to have a previous idea that helps the subsequent analysis and construction of the knowledge necessary to produce

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conclusions to the researcher, action that without Artificial Intelligence could take days or even months to compile and analyze.

Due to the large volume of existing information, the result is a wide range of criteria which is found in various scientific journals or various documents verified on the Internet, which implies that the researcher has to spend much time in the discrimination of relevant information, verified and updated to the existing changes in the modern world, being the benefit of the use of Artificial Intelligence vital to establish filters to select specific information (Fajardo et al., 2023) , where it is also possible to obtain a previous result that serves as a basis for a deeper analysis by the researcher according to his proposed objectives.

Once a result is generated by Artificial Intelligence from a filtered information search, it can be disseminated in several ways, being another of the applications to transform the results into voice, images or videos, an action that allows a better understanding of the information collected, and allows a construction of knowledge in an active way for both the researcher and for students in case of developing an investigative task.

The mentioned characteristics are the most common advantages of Artificial Intelligence, being more specific for areas of knowledge such as medicine, the application of mathematical or physical calculations, in the generation of images or comparison of data applied to the design of structures, mechanical parts, etc. For these sciences, the advantages are endless, being a vital tool to establish mathematical and statistical relationships especially with data obtained under different conditions or to establish predictions.

Results

Traditional research vs. the use of Artificial Intelligence in the Ecuadorian educational system

Of the exposed benefits offered by Artificial Intelligence, it makes it a reliable tool for the generation of knowledge, however, it should be noted that the traditional research that includes the use of methods, techniques and research instruments, which offer an infinite number of ways to reach the proposed result in the objective of each work, has not lost any validity , because being a continuous, logical and sequential process, it allows its validation per se, as well as

establishing and verifying phenomena that can only be achieved in field research or through direct observations by the researcher (Tamayo et al., 2024) . Similarly, the design and selection of techniques and instruments is the personal seal of the researcher, so that all these elements together are those that enrich and keep alive the spirit of the execution of a traditional research, which versus the benefits of Artificial Intelligence does not lose validity, since the latter only analyzes data and documents that are online or otherwise have been loaded into an Artificial Intelligence engine existing in the global data network.

Now in Ecuador, where as in many parts of Latin America the massive use of the Internet and its applications on mobile devices is part of the life of students and young professionals (Tonato & Valencia, 2021) , makes Artificial Intelligence, which is constantly evolving, can be a tool to support traditional research, especially in the preparation of scientific articles, projects and theses, because traditional research can be supported with AI for (Fayad et al., 2021) :

- Compilation of statistical data and their automatic collation and comparison.
- Search with the filters programmed in the Artificial Intelligence search engine to obtain relevant information such as the Theoretical Framework and the State of the Art.
- Proofreading and editing of text in the shortest possible time, especially for long documents such as theses and projects that exceed 50 pages.

These advantages in the Ecuadorian educational system, allows Artificial Intelligence to constitute a tool accepted by all educational centers, in order to improve research processes, thus creating a research and reading culture which has been decreasing with the massification of the internet and the reduced investment in public education by governments from year 2020 (Zamora et al., 2025) , investing in other sectors such as defense, social services, For this reason, the use of Artificial Intelligence should be oriented in such a way that it can focus educational research processes on continuous improvement, not underestimating the human factor at the middle and higher levels, since at the basic level, the child has to discover and build knowledge on his own based on playful or assisted activities that

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allow an active interaction, whether teacher-student, student-student, and student-learning environment.

As a result of the use of Artificial Intelligence as a complement to traditional research, the competency in Information Management (CMI) is developed in a way that allows it to be a research seedbed and prepares them for their future job (Cardenas et al., 2025) .

The roles of the Ecuadorian facilitator in the use of Artificial Intelligence. A balance of its use, for the development of critical thinking and analysis.

From the massive use of social networks on mobile devices by young students in middle and high school, it is necessary for the Ecuadorian facilitator or teacher to take advantage of this fact that cannot be hidden. At first glance it would seem that Artificial Intelligence used on a large scale, undermines the student's ability in their cognitive abilities or to run an analysis (Ubal et al., 2023) , or otherwise not exercise your mind in the development of critical thinking, however, this tool that constitutes the AI, addressed in a balanced way, allows the development of classroom activities according to:

- The social and economic reality of Ecuadorian students with respect to their access to the Internet.
- Its capabilities to handle office automation and the management of information on the World Wide Web.
- The reading comprehension and research skills of each student at the middle and high school level.

Therefore, the role of teacher-facilitator should focus on being a learning guide where specific limits or functions are established for the use of Artificial Intelligence (Aguilar et al., 2024) , or otherwise maximize its use for the construction of knowledge by means of:

- Image creation.
- Video creation.
- Creating written results and converting them to banners or infographics.
- Creation of executive documents.

Therefore, the use of Artificial Intelligence by students constitutes the personal signature that can be put by each of these, for the construction of their own knowledge, since it offers a space for

creativity, imagination and problem solving based on learning that will only be demonstrated during the use of all the benefits offered by AI.

It is necessary to indicate that, with this, the use of Artificial Intelligence offers as a result a personalization of learning, which can be optimized by the teacher facilitator, exploiting both the cognitive abilities of the student and the technological benefits offered by the AI application. It is important to emphasize the role of the teacher facilitator, since when he/she establishes the limits of the use of AI, it allows each student to develop his/her critical thinking, reflection and analysis as an essential element for learning by developing other group and individual activities that allow individual research (Numa et al., 2024) , collaboration and sharing of the information collected with peers, associating the data collected with truthful and reliable information, and developing individual or collective critical thinking, as the case may be.

All the elements of active learning mentioned in the previous paragraph have as their ultimate goal the development of autonomy in thinking, as well as in self-reflection that allows the discovery of own and collective errors, focusing the student to the development of a process of continuous improvement that allows inclusion, as well as personal commitment to constant learning. In practice, the teacher-facilitator in addition to setting the tasks to be performed during the autonomous learning processes, must establish an internal procedure for a continuous monitoring of the progress of each student both for the process and the result, thus verifying the progress and construction of knowledge with the help of the AI , and also the essence of the objectives proposed in each content of the area of knowledge being studied.

Establishing the limits of the use of AI by the teacher facilitator helps students to develop their skills and cognitive abilities in each area of knowledge based on its intrinsic nature, thus maintaining its particularities and characteristics that differentiate it from the others, both in its study and evaluation procedures. Taking into consideration that AI is only an aid tool for the generation and construction of knowledge, it can only be used once the search for information or the traditional research process has been carried out, or in its absence, the tasks of each area of knowledge; with these activities, the teacher-

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facilitator can execute a number of methodologies that allow each student to feel committed to their learning process, thus being an innovative experience for both the student and the teacher, establishing a constant feedback for the teacher and the educational institution (Ribera & Montesdeoca, 2024) .

Activities to be carried out for the use of Artificial Intelligence in middle and higher education in Ecuador. Revaluation of traditional research.

With the above, the theme of the use of Artificial Intelligence can be applied in all fields of science as indicated, but specifically in its implementation for the middle and higher education level in Ecuador, has its particularities since as mentioned above, in the country there is a great acceptance of social networks, and applications for technology, where it has been mentioned on multiple occasions that it has become an addiction among Ecuadorian youth, which is why it is viewed with displeasure by many teachers in the country, to the point of suspending all types of support that social networks and multimedia applications can offer (Chávez & Coaquira)Coaquira, 2022), 2022. , since they affect the development of critical thinking, analysis and logic, accustoming the student to leave aside traditional research, to concentrate only on macro data that do not have a verified source or that only summarize data that do not adapt to the reality of historical facts, or that have biases based on the source's own criteria.

The situation in Ecuador can be reversed by using this alleged threat to the educational process as an opportunity to enhance information management and research skills at the middle level (eighth to tenth grade of Basic Education and High School) and at the higher level (third and fourth university level) (Apolo et al., 2024) , by means of specific activities that are focused according to their area of knowledge or grouped according to the university career being followed; in all cases, the specific activities must have the following provisions:

- To be a learning process, defining well the role of the teacher and the student both in the classroom activities and in the autonomous learning process.
- Promote research in all facets of the activities.
- Define which activities will be done through traditional research or assisted or autonomous knowledge construction

activities, and which activities will be done with the help or assistance of Artificial Intelligence.

- All activities involving resolution, analysis, conclusions or interpretation of results will be performed by the student, without AI assistance.
- Group presentations to activities involving collaborative work will be done with the help of AI, however, the analysis will be based on the group's intellectual production.

These provisions followed periodically will allow, among others, to optimize the great dependence of Ecuadorian youth to social networks and mobile devices, to create a virtual and interactive learning environment, using all existing applications, being AI a complement that can be magnified to optimize time and develop innovative and creative ideas to improve the study of all areas of knowledge (Morocho et al., 2023) .

For General Basic Education, in areas such as Language and Literature, Social Sciences and Natural Sciences, the use of AI can be focused on the search for information that is verified, so that after its subsequent analysis, the conclusions are made by cognitive processes, while the knowledge construction activities are shown through images or videos with AI. Likewise, students can use AI to establish relationships or comparisons that allow them to associate the results obtained with other research (Montoya et al., 2024)

At the same level of General Basic Education, for the area of Mathematics, the use of AI can be used to search for mathematical relationships with other works on the same subject, and thus be able to adapt them to the reality of the problems to be solved based on the texts used for the national curriculum.

For Foreign Language, AI offers more possibilities to build knowledge, since there is a greater amount of information in the network that can be discriminated in foreign language, there is a greater scope for the construction of knowledge to be effective and efficient for a better understanding, as well as to create a methodology adapted to the reality of the level of foreign language knowledge in Ecuador.

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For the level of General Unified Baccalaureate (BGU), in which the skills and basic knowledge have already been developed, and it is sought that the student develops skills and knowledge to be applied for their next university life, this is the period in which the use of AI can be enhanced, when performing work that seeks the praxis to everyday life, in addition to executing activities focused on the environment or study environment, so the research to be conducted both in the areas of Language and Literature, Social and Natural Sciences and Mathematics have greater depth, where AI allows greater discrimination of information by the large volume of data to be collected, and once this task is accomplished, develop in a more in-depth way, where AI allows greater discrimination of information due to the large volume of data to be collected, and once this task is completed, develop in a more detailed way, the information to be collected in the areas of Language and Literature, Social and Natural Sciences and Mathematics have a greater depth, where AI allows a greater discrimination of information by the large volume of data to be collected, and once this task is accomplished, to develop in a traditional way a deeper analysis, reflection and critical thinking by the student, where the information obtained allows amalgamating methods, techniques and research tools, with the information or data collated by AI, for its subsequent interpretation to issue conclusions (Crespo et al., 2025) .

As can be seen, at the level of General Basic Education and High School in Ecuador, traditional research can coexist with AI applications, therefore it does not lose its value and can enhance the use of social networks and AI applications, which are linked to the network, Its potential is the production and generation of innovative ideas in young people between 12 and 17 years of age, something that in Ecuador is not developed until they reach university, which is why the use of AI can be maximized to help individual research procedures and thus obtain the same results but in a shorter time and in a reliable manner (Maldonado et al., 2025) .

In Higher Education, both in the Third and Fourth Level, where the learning process is focused on the realization of research work and individual production, as well as directed to the link with the community, traditional research has a primordial role, due to the fact that field work must be carried out in a compulsory way, Therefore, here all the help that multimedia can offer is needed to support the problem studied, being the role of AI, the search for information and data, which can be compared with a national or foreign state of the art

that fits the needs of the researcher (Vera, 2023) . As mentioned, the large volume of existing information in the global data network makes the support of AI necessary, so that more than a tool, it constitutes a support for the execution of the research process, providing the Theoretical Framework, the Conceptual Framework and the State of the Art, since it can compile statistical data, numerical projections, or the collation of qualitative information and transform it into numerical data that allow an interpretation, analysis and issuance of personal criteria that help to establish the final conclusions in the research focused on the solution of national problems or in the learning environment, the main characteristic of the work at the university level.

With the conclusions, the researcher of any research work, whether it is an essay, a scientific article, a thesis or a project, can use AI to expose his results either with video or images, and can disseminate it on the World Wide Web or through social networks in the different learning communities that exist in them.

It is necessary to indicate that the role of teacher facilitator for the Third and Fourth Level of Studies, focuses precisely to verify the limits of traditional research and the help of AI, where the amalgamation of both ways to obtain information enriches the entire research process itself, which is why it is verified that traditional research does not lose its validity, being these procedures still valid in the XXI century for any type of work that is carried out at any level of education, being adaptable for the Ecuadorian society which by its great dependence on social networks and online applications, an opportunity to optimize the learning process, the acquisition of knowledge, and promote scientific research.

Conclusions

Artificial intelligence is currently a tool that is constantly evolving, and that increasingly assists in everyday tasks in industry and different areas of science, being the education sector where it has a great field of action. It is here where its applications and basic functions allow students to exploit its benefits, to acquire data and knowledge that support the construction of knowledge, the basis of the learning process in the XXI century.

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Since the generation of knowledge is a basic competence in the XXI century, it is currently supported by the use of Artificial Intelligence in order to gather information or expose it once it has been compiled, collated and analyzed. These benefits are those that allow the acquisition of competence in information management, which is the basis for conducting a proper research that meets the characteristics of the XXI century, based on the collation of theory, a state of the art, and the personal judgment of the researcher.

Now, despite the existence of this tool, traditional research has a preponderant place, because it allows field work and direct observations, where the design of research strategies comes into play to achieve the objectives proposed in each work, applying the method, technique and instrument most appropriate for the effect. Since, in Ecuador, the Ecuadorian youth has a great acceptance of social networks and all online applications, the use of AI should be seen as a support and a tool which allows the development of innovation, generation of ideas, creativity and problem solving.

Therefore, the importance of AI in the Ecuadorian educational system allows it to be seen to maximize and complement traditional research at the levels of Basic Education, High School, Third and Fourth University Level, and not to be valued as a computer tool that undermines the capacity for analysis, reasoning and critical thinking.

Therefore, due to the benefits of AI, specific activities can be established at the middle and higher levels in Ecuador by the teacher-learning facilitator, where traditional research is revalued in the Ecuadorian educational system due to its ability to obtain information that is only achieved through the application of this, or that is not found in an integral way in the world data network, which is where the AI obtains information, thus also establishing the importance of the human factor for the execution of analysis and conjectures that allow to reach the conclusions and fulfill the proposed objectives of a research of any type.

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