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THE IMPORTANCE OF DIGITAL SKILLS IN ACADEMIC RESEARCH PAPERS

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Abstract: The problem detected is that undergraduate and even postgraduate students still do not have a handle on the digital tools that today are being used for the analysis of information, data, trend analysis through machine learning and this puts young professionals at a disadvantage against those who do understand and use them. To understand the scope, surveys and interviews were carried out, then training was carried out on some platforms and the participants did not know the program or did not have great interest in learning how to use it or see how it could be part of their study style. Digital competences are necessary skills for the development of academic research in the digital age. Today, access to information and digital technologies are essential to carry out quality research. Some of the digital competences that have been detected need to be included by the professional profiles of the graduates are: The ability to carry out effective searches online, that is, students must be able to find and access relevant information for their research effectively and efficiently on the Internet; the ability to assess the quality of information, it is important that students can assess the quality and veracity of the information found online and other digital resources; the ability to organize and store information, students must be able to use digital tools to organize and store information efficiently; the ability to analyze and visualize data, meaning the ability to use digital tools to analyze and visualize data is increasingly important for academic research, and the ability to collaborate online in academic research, collaboration between students from different locations is becoming more common. In the academic life of our students and graduates who are developing their thesis work, which is a purely investigative activity, it is essential to take advantage of digital skills to conclude with a contribution to engineering

or science. In this aspect, the scope is for all undergraduate and graduate students of the Continental University.

It is concluded then that working with artificial intelligence tools, advanced editing programs and others that allow an agile, secure and traceable search of information sources can be done in less time and thanks to other systems that work collaboratively to share, store, edit and review information in a wide variety of formats allows the researcher to relate more quickly and efficiently with researchers from other places. Thus, it is possible that the research development process is much less complicated and easier to validate and review in order to continue with publications and patent development, among others.

Keywords: Machine learning, internet of things, artificial intelligence, research, digital transformation, digital tools.

INTRODUCTION

Digital skills are competencies related to the use of the Internet and digital tools. They are an important area of focus for universities, both in terms of training for teachers and students, as well as for the writing of academic research papers, today digital competence has been widely studied and discussed in academic and political documents, and is given increasing importance in higher education. The use of Information and Communication Technologies (ICT) in the study process is closely related to academic performance, and the development of digital competence is a part of academic literacy that requires the development of information and ICT literacies. It is crucial that students acquire knowledge when faced with everyday technological problems, and the development of key competence areas for digital competence, such as digital content creation, must be promoted. In a survey conducted with a sample of 786 students from the Faculty

of Education, it was found that students' perceptions of digital skills in terms of information and data literacy, communication and collaboration, and security are positive. However, there were significant differences in students' self-perceptions of digital competence related to gender, grade level, area of residence, and relevant previous training on the DigComp framework-based instrument. Female students need support in selected areas of digital competence, while lower grade students and students from rural areas need assistance in developing their digital competence.

Universities are expected to equip students with digital skills to meet the demands of the changing educational model and future job challenges, digital skills training and development must be included in teaching curricula as a priority area for teachers and students [1]. Ultimately, it is essential to investigate the digital skills of students and teachers in academic institutions. We can affirm that the training and knowledge of these tools will facilitate the scientific production and the number of research documents for the University and with it the positioning in the list of the universities with the highest number of publications [2], which is always well seen in the academic community in addition to promoting the professional development of the graduates by having the status of engineer in an agile way thanks to the SUPPORT OF THESIS IN SCIENTIFIC ARTICLE FORMAT whose regulations already exist in Peru and some universities that meet certain conditions can apply and Since 2023, the Continental University can use it as a degree system for its graduates, thereby promoting the development of high-level scientific research [3].

The legal basis is: *Law No. 30220 – University Law. Regulation of the national registry of degrees and titles. Regulation of the national*

registry of works leading to degrees and titles - RENATI, Academic Regulations of the Continental University and the Research Regulations of the Continental University.

METHODOLOGY

A survey was used in the year 2023 at the Continental University during the first months of the year, after having carried out a light training to a group and to another group only links were sent and some of the advantages were shown in the classroom, but learning about them was left to the discretion of the undergraduate student. The students have as objectives in the academic program of closing their academic training to elaborate a thesis plan and for this they require a basic research topic.

The surveys and interviews taken are based on surveys taken in similar research works and were developed with the aim of perceiving the feelings of the students and what challenges their employment in research within subjects at the university means for them.

In order to study the information, Python was used in Google Colaborate as the main tool, where the quantitative and qualitative variables were worked under dictionary schemes (for Python) or were given numerical values in order to show a level of perception on a scale that is simple to show, analyze and understand.

ANALYSIS OF RESULTS

Usefulness of artificial intelligences for research, 40% (according to a survey taken in the study group at the Continental University – Electrical engineering major, Substation Design course, Power Systems and Measurement Fundamentals, self-made survey) of the students managed to improve the time dedicated to tasks to be able to read more asynchronous activities and arrive better prepared in the matter to hold a discussion

of the topics or come with a greater number of queries to be discussed in class with their peers and guided by the teacher who can now participate with a new role in the classroom, being more of a mentor than just explaining the topics already programmed and allows a topic to be understood in greater depth [4]. He has also managed to talk about major case studies. Even for those who did not achieve this improvement due to the lack of use of the artificial intelligence tool, they have been benefited by the greater discussion. Those who are auditory or visual have managed to increase their level of participation in both cases and the level of acceptance of the classes has risen, in addition to being able to increase interest in the class for other classmates who ask for references for specialized career courses.

On the other hand, the utility in being able to pass the tasks has been considered as part of the questions and definitely for 75% of the students it has been very useful, this is where the issue becomes complex since the spirit of the tasks is a review of topics for the students and not executed by an artificial intelligence, in order to maintain interest and usefulness, changes have been made to meet the learning objective. In this case, feedback is given that the student reviews when he completes his task, which is taken into account with an online score and artificial intelligence is not always correct, it depends a lot on the conditions of the questions. For this, the monographs have been reduced and more tasks are executed on platforms that force the student to play [5].

Playful activities such as those done in Genially or Kahoot allow the student to maintain interest and allow a reward system where the theory of gamification for learning is used. This system has the advantage of being able to be long-term, taking it along courses that have a roadmap, and is favorably changing the perception of compliance with

the curriculum in the engineering career.

Regarding the contributions, the mentioned references highlight that gamification can improve student engagement and motivation, encourage collaboration and teamwork, as well as increase knowledge retention. Among the difficulties encountered are the need for a careful design to avoid trivializing teaching and the lack of adaptation to the specific needs of students.

Regarding the impact of the use of artificial intelligence, it is mentioned in some studies that this technology can be used to personalize the learning experience and better adapt to the needs of each student. However, the importance of taking ethics into account in the design of gamification systems that use artificial intelligence is also highlighted, in order to avoid possible biases or discrimination [6].

The use of artificial intelligence in scientific research has generated a growing interest in the development of theories that explain and guide its application. Some of the most relevant aspects of the existing theories that are related to this research object are presented below [7]:

- Artificial Intelligence and Machine Learning Theory: This theory focuses on the development of machine learning algorithms and models that enable artificial intelligence to analyze large amounts of data and extract complex patterns and relationships. This theory is essential to understand how artificial intelligence can be applied in scientific research, since it allows the analysis and processing of large amounts of data in a short time.
- Theory of artificial neural networks: This theory is based on imitating the functioning of the neural networks of the human brain to develop artificial intelligence algorithms. This theory is relevant in scientific research since it

allows the analysis and processing of complex data and the simulation of biological processes.

- **Open Science Theory:** This theory focuses on transparency, collaboration, and free access to data and research results. In the context of artificial intelligence in scientific research, the theory of open science is relevant as artificial intelligence can help researchers process large amounts of data and make the results more accessible and transparent [8].

- **Artificial Intelligence Theory of Ethics:** This theory focuses on the ethical and social implications of the use of artificial intelligence. In the context of scientific research, the theory of the ethics of artificial intelligence is relevant since artificial intelligence can be used in ways that pose ethical challenges, such as privacy and the use of sensitive data.

- **Computer simulation theory:** This theory focuses on the use of computational models to simulate complex processes and predict results in different contexts. In the context of scientific research, the theory of computational simulation is relevant since artificial intelligence can help researchers to process large amounts of data and simulate complex processes in different fields, such as physics, biology, chemistry, among others.

We can then see how the existing theories on artificial intelligence and its application in scientific research focus on different aspects, such as machine learning, neural networks, open science, ethics and computational simulation. These theories are relevant to understanding how it can be applied in scientific research, and how to address the ethical and social challenges associated with its use [9].

It is necessary that the courses associated with the philosophy of research and ethics are not exclusive to courses in the legal or medical area, but also in engineering. Little by little, the classical sciences are becoming more related to each other and the new order will have careers that will have a natural mix between them given the growing digital transformation and how little by little the world sees it as more necessary for professionals to multitask and with knowledge that is increasingly broad and complementary to each other [10].

RESULTS

Today, the increasingly free and unguided use of study, research and development tools forces students to self-manage their learning, which traditionally was always one of the goals of teachers, to instill self-learning and searches for new sources of information to complement what is learned in the classroom with what students can develop alone, but in recent years students have displaced the idea of studying in groups, doing collaborative work or asking experienced people to use search engines to learn, this can be seen in the following figure, where the sources most used in tasks and research stand out. There are even many who do not know anything about the use of search engines and develop their own technique, which is generally not good enough compared to those who do have a guide to get the most out of it.

But it is not only the use, there is also an attachment to the use of the new tools that make it difficult to change or adapt to this new model, which during the pandemic was the best way to reach students and continue academic work, but today it is becoming a new way of working, which without proper guidance can undermine what is sought in true research, resulting in academics who are unclear about the methodology or whose concepts become unsound in the face

of scientific discussion or in a high-level academic environment. These risks must be mitigated with rules, regulations, regulations or even manuals given by organizations that are closely linked to the education and training of professionals.

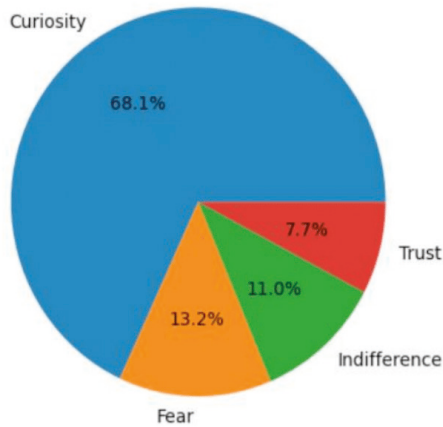


Figure 3: Sentiment about the use of AI.
Source: self made.

In the figure titled “Analysis of the information on the use of AI in research” as the main source of artificial intelligence used for research is the Internet, these are topics not yet discussed in forums or academic groups guided by an expert or advisor in the method, there is little information about its management and the advantages or disadvantages it may have for the student, there is a feeling of security that it reduces the time spent and therefore has value and is finally used to solve the tasks that must reinforce learning but that are now only sent resolved without content analysis made by the student but by the artificial intelligence on duty used by the student.

DISCUSSION OF RESULTS

It is highlighted that artificial intelligence can help researchers process large amounts of data, identify complex patterns and relationships, and improve the accuracy of predictions. However, some challenges are

also mentioned, such as the need to address ethical and privacy issues, as well as the need to develop a deeper understanding of how these techniques can be applied.

Artificial intelligence is transforming scientific inquiry in several areas, including biology, medicine, physics, and chemistry. In addition, some challenges are mentioned, such as the need to develop more accurate and reliable algorithms, as well as the need to address ethical and privacy issues.

Finally, it highlights the potential of artificial intelligence and big data to address health problems in minority populations and reduce disparities in health care. It is mentioned that AI can help identify patterns in large data sets and improve the accuracy of disease diagnosis and treatment [11].

CONCLUSIONS

The study of data, the unguided accessibility to the world of the Deep Web, the growth of employment platforms with artificial intelligences are a great challenge for teachers who must improve their employment and use to adequately guide students and achieve the goal, which is to train people for an aggressive, demanding work environment with a great need for adaptability to the requirements of the business or company. For this reason, it is necessary that the tools for training, monitoring and verification of compliance with the learning rubrics are truly focused on the total growth of the student and that they demonstrate increasingly empathetic, collaborative and case development skills to use their mathematical, scientific and analytical knowledge in problem solving, such as ABR or challenge-based activities.

It will be a great change in the way of qualifying the new aptitudes and attitudes of the students for the teachers who will have to be in constant preparation and with new and more diverse teaching methods in order

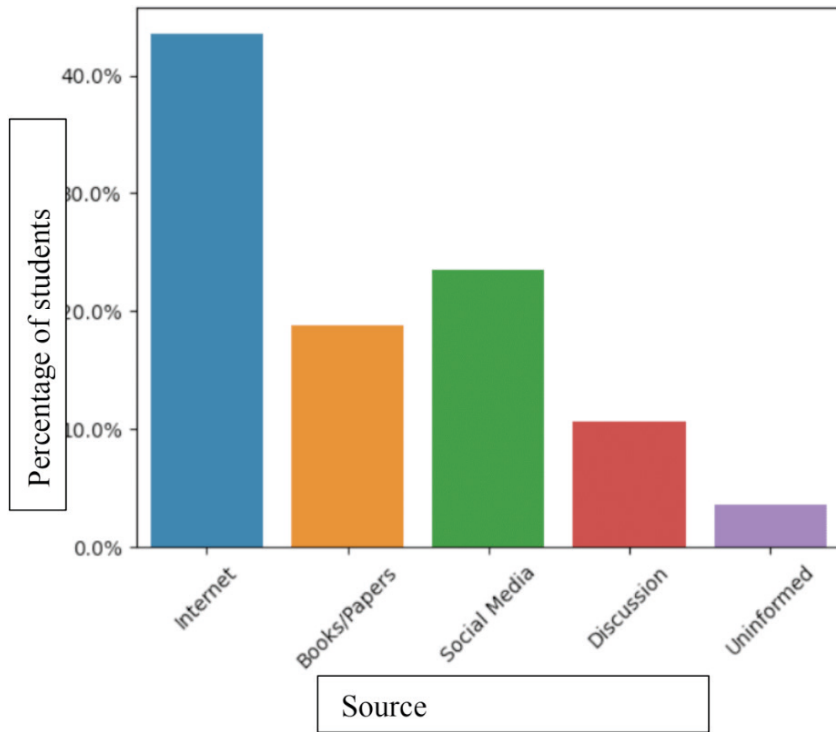


Figure 2: Percentage of students who get information about AI from different sources. Source: self made.

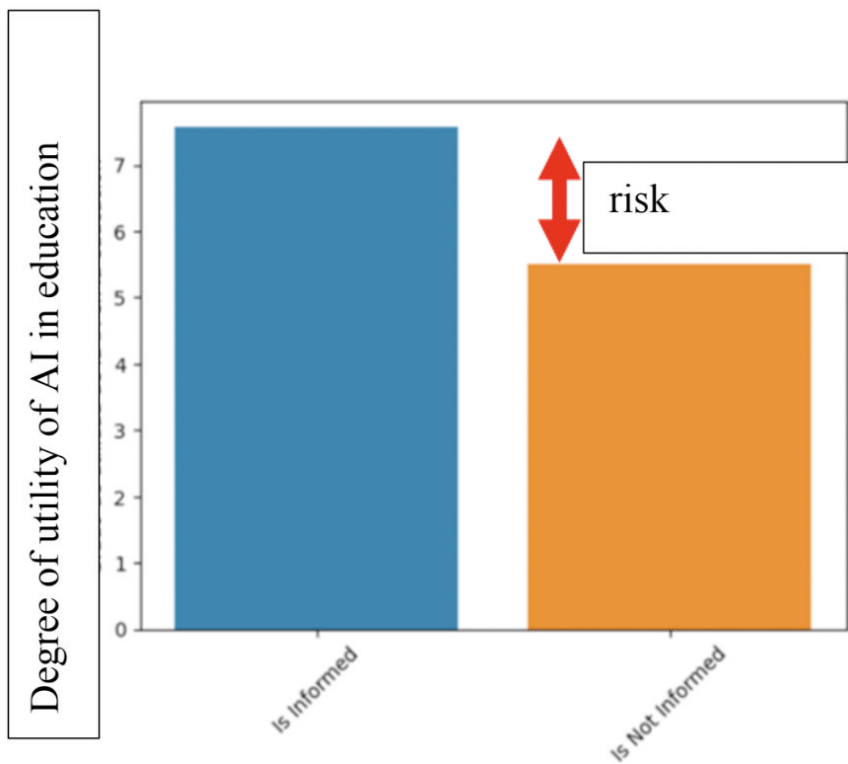


Figure 4: The student is well informed about the correct use of AI. Source: self made.

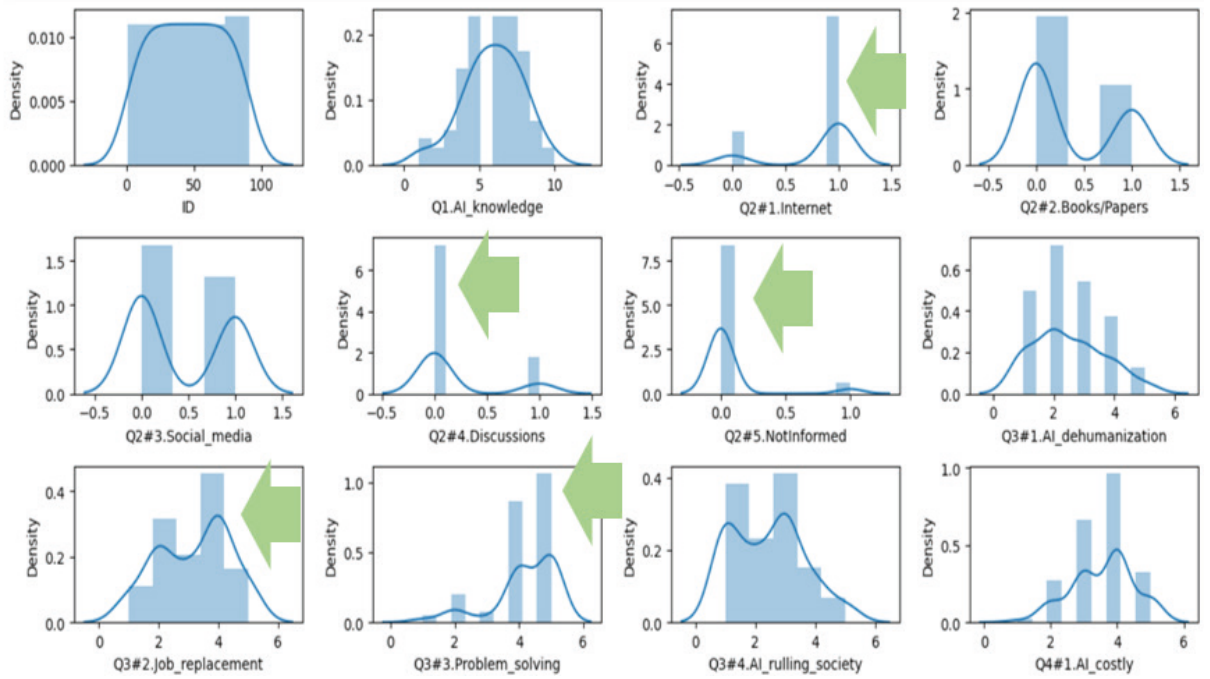


Figure 5: Analysis of information on the use of AI in research. Source: self made.

to transmit knowledge, it will be necessary to exploit playful or gamification techniques, which will have a large number of new programs and software to strengthen this technique and that will be essential in the next 3 years until some new aspect in research is consolidated again, be it for issues of artificial intelligence, regulations or others that will appear towards the year. 2030.

Likewise, the academy or the members of the groups that have the responsibility for education must work on updating the regulations on how to obtain and sustain the degree obtained by students and professionals in a way that is adapted to the ultimate goal of training and optimal performance of their professions in society. This must go hand in hand with regulatory changes, controls and laws that allow adequate certification by the State and the academic schools of the competencies of the graduates in all their

possible specialties, in addition to evaluating retraining plans or periods to test the probable competence of skills and knowledge through research, participation in events of interest, presentations, publications and participation in the professional and academic field through the respective Colleges in each branch of the various professions. This will need to be regularly reviewed and published to ensure a good standard.

Finally, ethics will play a great role in academic training and must be included in the courses that young students take before starting with specialty courses and must be long-term in the career, not limited to careers such as medicine or law, but engineering, design and others; in general in all careers that are taken and be a requirement within the conditions for support or forms of obtaining the degree after the Bachelor.

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