

## **Digital Competences of Teachers in Universities in times of Covid-19, Cusco-Peru, 2020**

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### **Abstract**

The research includes the digital competences of university teachers, whose objective was to describe the level of digital competences of teachers of the universities of Cusco-Peru in times of Covid-19. The research method was quantitative approach making use of statistical analysis, descriptive scope for which the characteristics of the study unit were identified, of non-experimental design since the research was carried out without deliberate manipulation of the study variable, observing it in its natural and cross-sectional context as it is carried out in a specific time frame. The study population was made up of 2,740 students corresponding to the professional schools of Administration, International Business, Economics, Marketing, Accounting and Administrative Sciences of the universities of Cusco in the virtual modality, there is a representative random sample of 886 students with a level 97% confidence level and 3% maximum estimation error, the research technique was the survey, the data collection instrument was the virtual questionnaire, and the SPSS statistical software was used for information processing. The most significant and relevant findings in the research correspond to the digital competences of university teachers considered high with 35.10% and very high with 32.10%, since professional commitment is relevant in the development of the teaching-learning process with the use of digital resources, the digital pedagogy used by teachers in evaluation and feedback that allows to empower students and continuously strengthen students' digital competence. Another of the findings obtained in the research corresponds to the professional commitment, which is the digital competence developed by the teachers with 83% that is evidenced through the dedication and commitment in the development of their teaching work using digital tools. On the other hand, it is shown that the evaluation and feedback process is considered by 72.50%, which is equivalent to a very low, low, and regular level, evidencing a low level of use of digital resources to innovate in the application of evaluations and feedback. The research is relevant as a contribution to further studies and to take corrective measures if necessary.

### **Keywords**

Digital Competences, Digital Pedagogy, Digital Resources

## 1. Introduction

At present, at the international and national level, through globalization there are various ways of appreciating the use of new digital tools in virtual education, especially in the educational field since the COVID-19 pandemic began in a matter of weeks, the way education is delivered has changed (Ruiz, 2020). In various parts of the world and in our country, teachers and students are trying to adapt to the new “routine” and the challenges that learning online implies (Delgado, 2020). This constitutes an enormous challenge for higher education institutions since face-to-face education is transferred to virtual mode from home, after the necessary regulations are carried out at the national and international level (Villafuerte, 2020).

The general problem of the research includes: How are the digital competences of the teachers at the universities in the universities of Cusco-Peru, in times of COVID-19? The justification and importance of the research lies in knowing the digital skills of university teachers for decision-making in the continuous improvement of teaching performance through training on technological tools in teaching and training students.

### 1.1 Objectives

The objective of the research was to describe the level of digital competences of teachers, as well as to describe the professional commitment, digital resources, digital pedagogy, the evaluation and feedback they use, the capacity for empowerment and the characteristics that facilitate digital competence. of students in the universities of Cusco-Peru in times of Covid-19.

## 2. Literature Review

Teaching digital competence enables abilities and skills to develop critical sense, obtain information and create knowledge to disseminate in the academic and scientific fields. The use of technologies and the digital skills of teachers are increasing rapidly, in this way the university evolves according to technological advance, offering new profiles according to the demand of society (Levano et al., Pain, 2018).

Virtual education is a subject studied in a relevant way at the level of academic and scientific articles, without a doubt it has been being put into practice only in some universities given the demand in terms of technological infrastructure and the training of teachers and students, which requires investment, as indicated by some studies. The accelerated development of information technologies, the changes in the teaching-learning process because of the pandemic and the training of students to be digitally competent requires that educators develop their digital competence, understood by this term as: “a set of knowledge, skills, attitudes and strategies that are required for the use of digital media and information and communication technologies” (Unibertsitatea, 2017).

Digital competences are defined as "a spectrum of competencies that facilitate the use of digital devices, communication applications and networks to access information and carry out better management of these" (UNESCO, 2018). Allowing to create digital content, exchanging it and collaborating to solve different problems in an efficient and creative way. (Ministerio de Educación de la Nación, 2017).

According to Díaz and Serra (2019) point out in their research project, teachers do use digital tools in teaching-learning work and are familiar with the programs using mobile devices, but they still need to work more on creating content in the development of new topics that contribute to the training of students. Despite the fact that many teachers have the necessary skills, they indicate that they prefer to use the topics already developed. Another point to highlight was on the issue of information security, since they do not use antivirus much and with regard to the exploitation of data, so they indicate that they should take corrective measures to reinforce this point. Despite the circumstances that live in that country, university teachers have the strengths to use digital tools and for the training of students that their society requires.

The rapid increase in access and connectivity to the Internet paved the way for the development of a digital economy worldwide, digital skills, previously optional, have become essential, however, there are great inequalities that are the consequence of the lack of digital skills both in developing and developed countries mainly in the teaching-learning process. (UNESCO, 2018).

Within the teaching-learning process, one of the points considered by Canabal and Margalef (2017) in their research is the feedback that is made with the students, this influences the motivation and improvement of their learning using letters delivered in specific dates where the student can reflect based on their learning process.

The theoretical foundation for the development of digital competences research was carried out in reference to the European Framework model for Educators' Digital Competence, presented by Christine Redecker for the Joint Research Center at the service of science and knowledge of the European Commission. (INTEF, 2017). According to the Common Framework for Digital Teaching Competence, a curricular imperative in the training of skills is digital skills "which requires the correct integration of the use of ICT in the classroom and that teachers have the necessary training in this competence." (Ministry of Education, Culture and Sport, 2017), not only optionally its use but through a common framework of references so that it is standardized and thus all teachers have this digital competence in their teaching professionalization (Colás-Bravo et al., 2019).

For Pozos and Tejada (2018), in their research "Digital Competences in Higher Education Teachers: Proficiency Levels and Training Needs", based on a previous model of teaching digital competence in higher education, a mixed exploratory descriptive study of the type of transformer-concurrent (QUAN + QUAL). It starts from a multi-stage design in the study of detection of needs in accordance with two of the objectives of the study: to identify the current competences and to establish-prioritize the training needs. The study population refers to the teaching staff of university institutions in the Metropolitan Area of the Valley of Mexico. The digital skills most dominated by Mexican university teachers are those that are linked to the commitment and social responsibility of teachers with the use of ICT, for example, developing and providing digital materials and learning experiences enriched with ICT, considering the linguistic and cultural diversity of students. It concludes on the highest priority training needs in line with the medium-low level of verified competence mastery.

The results indicate a medium-low domain in digital competences that correspond to the teaching role, such as planning, developing, and conducting learning experiences and evaluation with the support of information and communication technologies (ICT). Next, above the theoretical average, but without reaching a considerably advanced level are digital competences related to research and professional development with the support of ICT. The digital skills most dominated by Mexican university teachers are those that are linked to the commitment and social responsibility of teachers with the use of ICT, for example, developing and providing digital materials and learning experiences enriched with ICT, considering the linguistic and cultural diversity of students. It concludes on the highest priority training needs in line with the medium-low level of verified competence mastery.

Likewise Llaullipoma et al. (2019) in the research "Motivating the training of Prosumer teachers: an experience of education students in a Peruvian University" whose objective was to motivate the training of Prosumer teachers by developing strategic digital skills related to the production of resources educational programs for student learning, as well as determining if these capacities can be developed through the pedagogical use of digital tools that allow future teachers to generate educational videos, create educational audios, design interactive stories and finally be able to integrate these resources within a virtual learning environment, for this they used descriptive and experimental research methodology, the study population being undergraduate students of the education career for the initial and primary level of a Peruvian university. The participants developed basic technical and pedagogical skills to function as Prosumer teachers, being able to produce educational videos, educational audios and create stories, integrating these resources into a virtual learning environment for kindergarten and elementary school children, the results indicate that despite of having in the millennial university classrooms, future young teachers with closeness to technology, had the need to develop specific skills to be able to use technology in professional development.

Several contributions by authors make their contribution to the teacher's digital skills for the teaching-learning process at different levels of student training, since digital tools contribute and facilitate the execution of academic and scientific research activities, improving in this way the pedagogical competences through professional commitment and innovative experience in many aspects that requires development of the pedagogical approach.

### 3. Methods

The study of the digital competences of teachers in universities of Cusco-Peru was carried out, whose scope of research was descriptive, non-experimental design, cross-sectional. The study population consisted of 2,740 students corresponding to the professional schools of Administration, International Business, Economics, Marketing, Accounting and Administrative Sciences of the universities of Cusco in the virtual modality, the type of sampling

corresponds to probabilistic sampling, the size of the sample was 886 students with a confidence level of 97% and 3% maximum error of estimation.

#### 4. Data Collection

The research technique was the survey, the data collection instrument was the virtual questionnaire (drive form), which was developed based on the indicators of the study variable that comprise 39 items. The Likert scale was used (1. Never, 2. Almost never, 3. Sometimes, 4. Almost always and 5. Always). The statistical software used to process the data was SPSS.

#### 5. Results and Discussion

The objective of the research was to describe the level of digital competences of the FCEAC teachers, to then analyze the dimensions and indicators of the teaching work in the use of digital tools, during the university training process.

The most significant and relevant findings of the research correspond to the digital competences of university teachers considered high with 35.1% and very high with 32.1%, since professional commitment is relevant in the development of the teaching-learning process with the use of digital resources, the digital pedagogy used by teachers in evaluation and feedback that allows to continuously empower and strengthen students' digital competence. Another of the findings obtained in the research corresponds to the professional commitment, which is the digital competence developed by the teachers of the FCEAC with 87.3% that is evidenced through the dedication and commitment in the development of their teaching work making use of the digital tools.

According to Pozos and Tejada (2018), in their research "Digital Competences in Higher Education Teachers: Proficiency Levels and Training Needs" concludes that the digital competences that correspond to the role of teaching present a medium-low domain, contrasting with the reality of the research in which the digital competences of the teachers of the FCEAC of the Andean University of Cusco present a high and very high domain. On the other hand, similarities are observed in both studies with respect to professional commitment, being the most relevant in the university teacher.

##### 5.1 Graphical Results

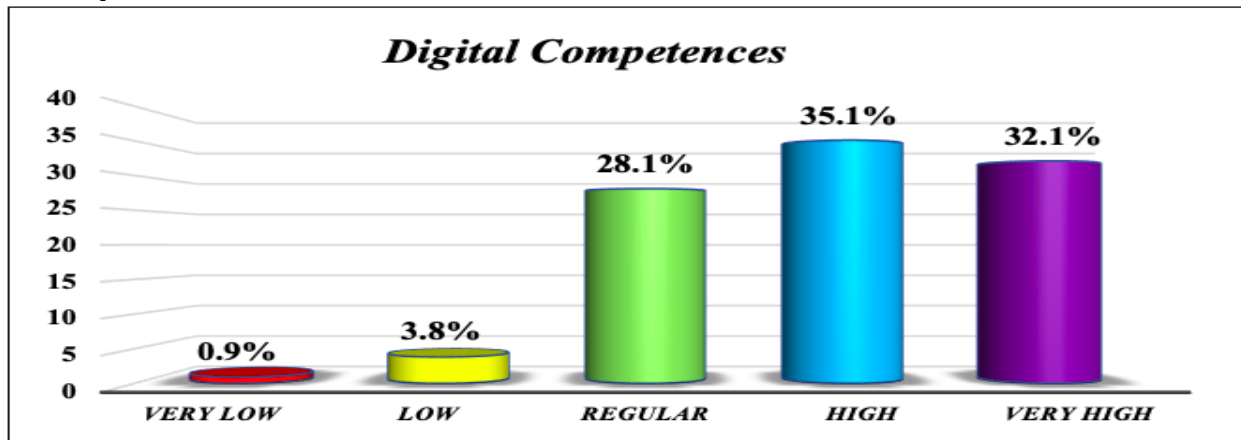


Figure 1. Digital Competences

It is observed in figure 1, of the total of respondents, the digital competences of university teachers present a result of 32.1% very high, 35.1% high, in this way the professional commitment in the teaching work with the use of resources can be evidenced digital technologies in the development of the teaching-learning process, digital pedagogy that involves the use of digital technologies used by teachers, evaluation and feedback that teachers apply to strengthen teaching in the training of students, as well as the empowerment of students as motivation strategy to achieve significant levels in the teaching of the learning process and facilitate students' digital competence during their training.

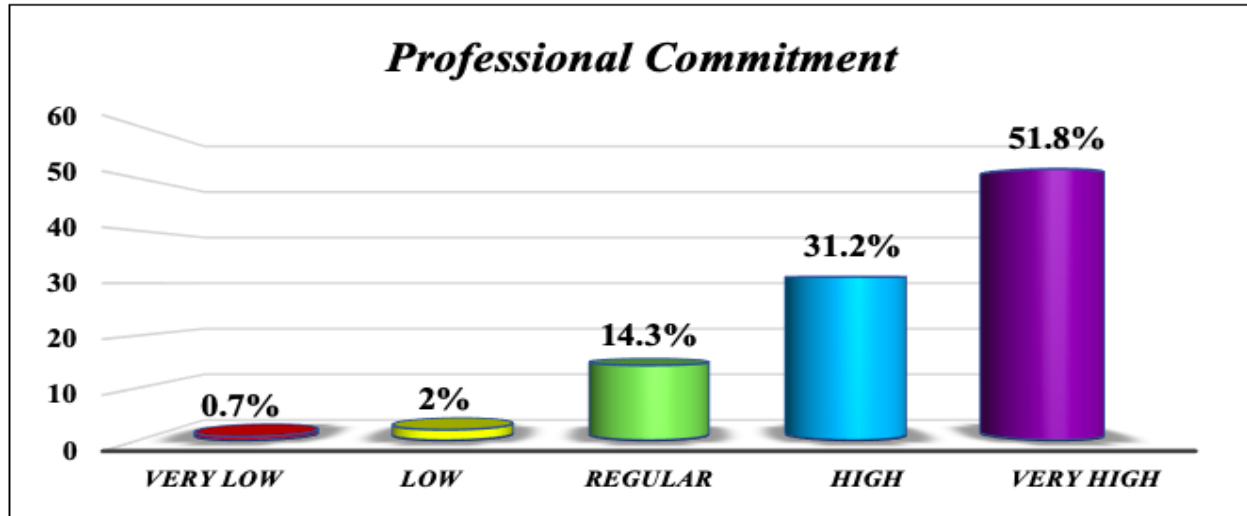


Figure 2. Professional Commitment

According to the results obtained, the students consider that the professional commitment of the teachers is equivalent to 83% high and very high, according to figure 2, due to the adequate use of technologies in the communication of the organization in the teaching process, collaboration and professional interactions with colleagues and other stakeholders for digital continuous professional development to facilitate your teaching work and reflective practice that allows you to evaluate and implement continuous improvement strategies.

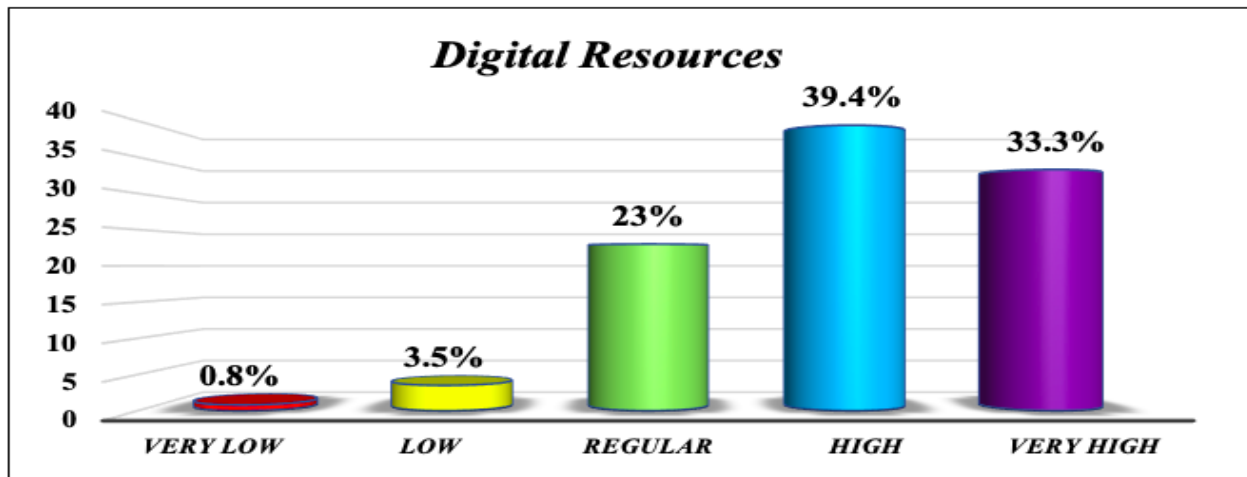


Figure 3. Digital Resources

As evidenced in figure 3, it is observed that 39.4% of respondents indicate that the use of Digital Resources is high, followed by 33.3% that it is very high, which is equivalent to 72.7% of respondents who indicate that Teachers do an appropriate selection of digital resources and content to support and improve teaching and learning, respecting and correctly applying privacy and copyright regulations.

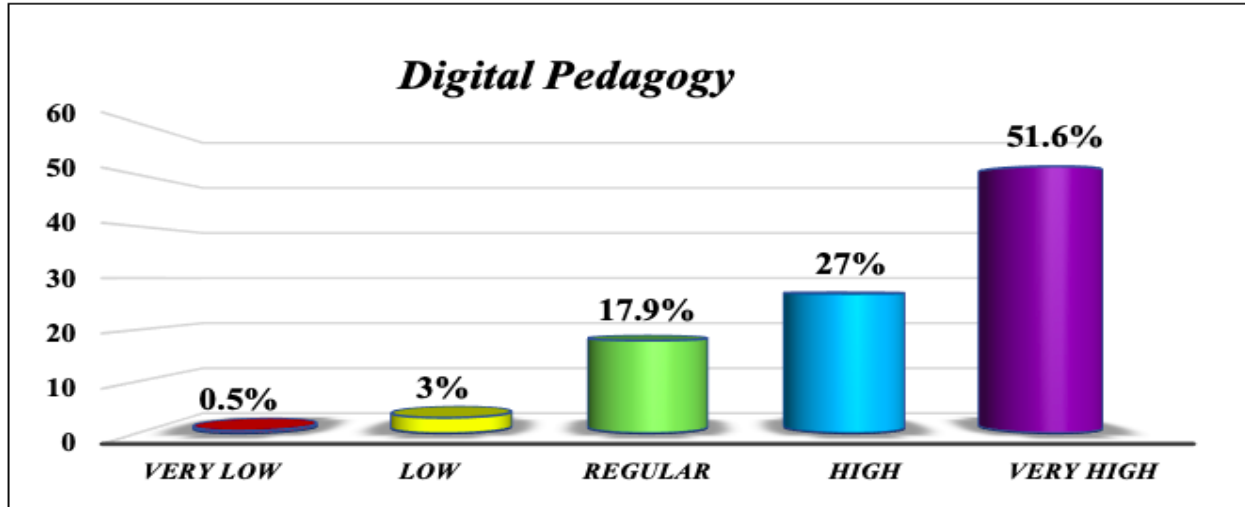


Figure 4. Digital Pedagogy

The results of the study show that 27% of respondents answered that the digital pedagogy applied by teachers in teaching is high, 51.6% very high, since the use of applied technological tools facilitates the development of collaborative learning and the monitoring of the planning of activities in the teaching-learning process, evidenced in figure 4.

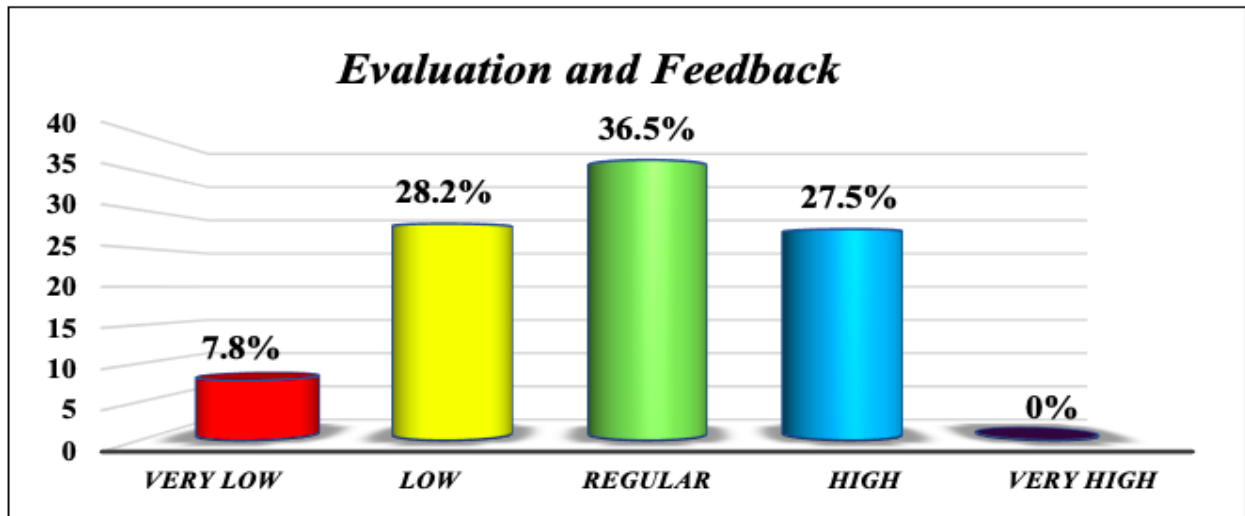


Figure 5. Evaluation and Feedback

It is evident that in figure 5, that 36.5% of respondents indicate that the Evaluation and Feedback process is regular, 28.2% is low and 27.5% is high, which shows that the evaluation and feedback process is considered in a 72.50%, which is equivalent to a very low, low and regular level, evidencing a low level of use of digital resources to innovate in the application of evaluations and feedback.

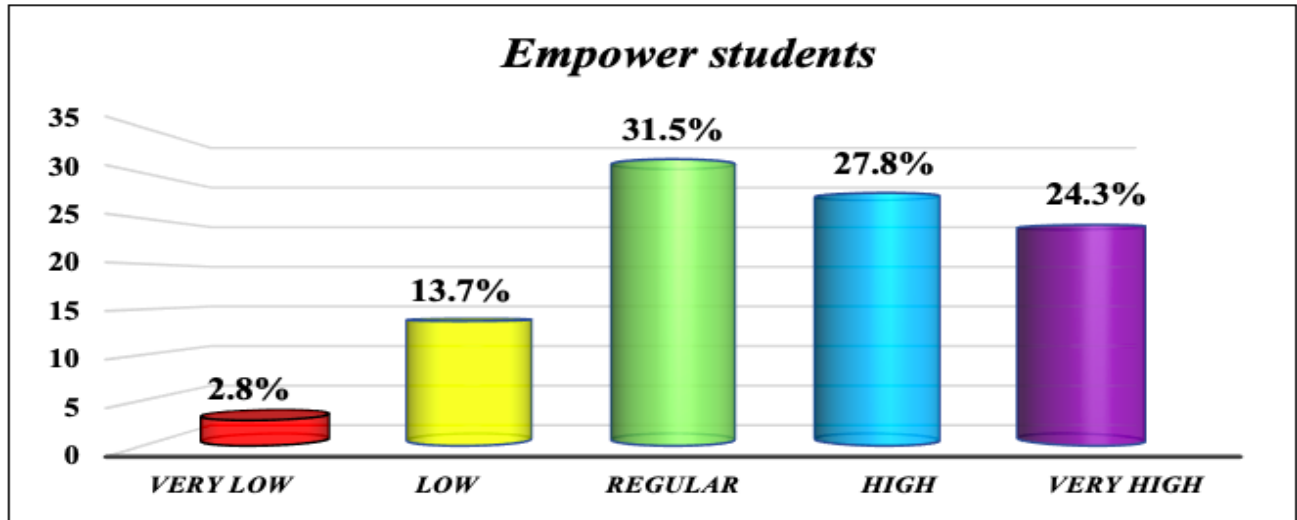


Figure 6. Empower students

The results show in figure 6 that the empowerment of students is 52.1%, which is equivalent to high and very high, which indicates that not all teachers empower their students by making use of digital technologies during research activities, making use of animations, and creating videos to explain new concepts, as well as the application of new tools: questionnaires or digital games to promote learning at different times or speeds according to their levels of difficulty in the training process.

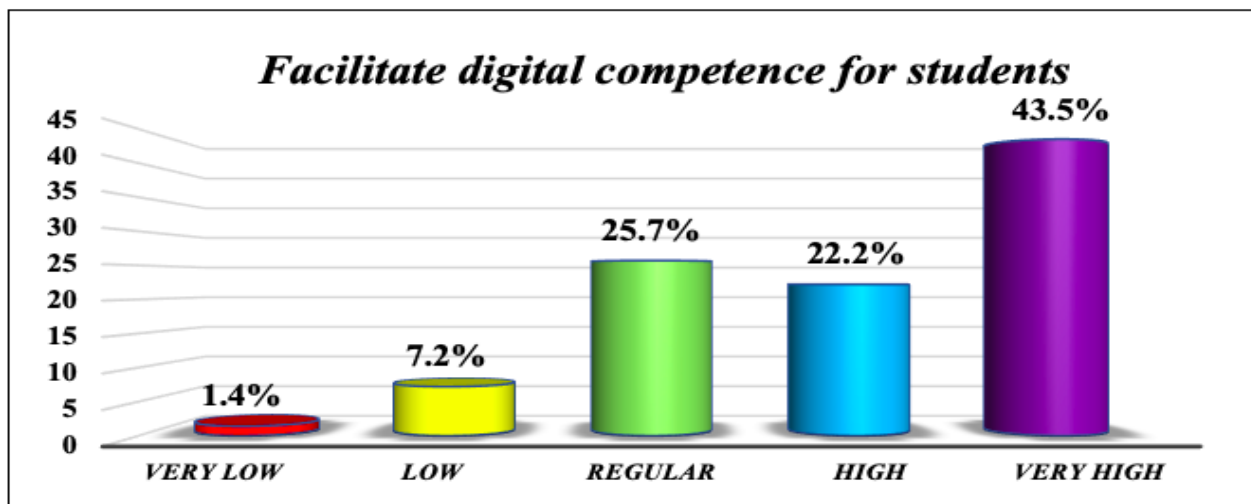


Figure 7. Facilitate digital competence for students

Of the total of respondents in Figure 7, the ease of use of digital skills is 43.5% very high, 22.2% high and 25.7% regular. The results show that teachers promote digital communication, promote student participation in scheduled activities and guide the responsible use of digital tools during research and academic activities assigned for their professional training.

## 5.2 Proposed Improvements

From the results obtained in the survey, we suggest implementing training programs in: Use of Digital Tools for each academic period, given the entry of new teachers and as a reinforcement for active teachers in the universities of Cusco. Training in Digital Competences for teachers in the universities of Cusco and in Evaluation and Feedback to

improve the teaching-learning process. Establish measurement policies in teaching management with respect to the efficient use of the virtual classroom to improve teaching performance.

## 6. Conclusion

According to the results obtained in the surveys, it is concluded that the teachers of the Faculty of Economic, Administrative and Accounting Sciences of the Universities of Cusco are trained in digital skills, being high and very high in 67.2% due to the professional commitment during the development of the teaching-learning process in the professional training of students and the use of technological tools.

It is concluded that professional commitment is high and very high in 83% according to the results obtained, since it allows teachers to use digital technologies not only at the University but also in their day to day, for their individual and collective professional development.

Teachers within the variety of digital resources have selected what is best adapted for each subject they teach, each group of students and their teaching style. Likewise, they make use of the security regulations in terms of data protection and sensitivity of critical data when using shared files and in research topics in the same way they indicate to students respect for copyright. All this is reflected as high and very high with 72.7% obtained as a result of the study.

Digital pedagogy corresponds to 78.6% according to the result obtained is high and very high, which indicates the use of technologies effectively during the planning and execution of the activities of the teaching-learning process.

Regarding the evaluation and feedback, a 72.50% was obtained, which is equivalent to a very low, low and regular level, evidencing a low level of use of digital resources to innovate in the application of evaluations and feedback. Only 27.5% of teachers make optimal use of digital resources to innovate in the application of evaluations, although this is a critical point in the teaching-learning process, it must be complemented with individual or collective feedback, thus achieving better perception by students. In the same way, in terms of empowering students in the use of digital technologies, a high and very high result has been obtained with a 52.1% response in the surveys, which indicates that not all teachers actively involve students in the use of technologies to create or explain a new topic or promote their transversal skills, being important that the participation of students can be promoted.

Finally, we can see that facilitating digital competence in students is high and very high with 65.7% in the surveys, this being a transversal competence that teachers need to teach students the proper use of digital technologies: the creation of content, responsible use, digital problem solving, information literacy and digital communication; All of this will allow students to use digital resources effectively and efficiently.

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## Acknowledgements

Our thanks to the Andean University of Cusco and the National University San Antonio Abad del Cusco for allowing access to information to carry out research with university students.

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