ICT IN EDUCATIONAL MANAGEMENT: EFFECTIVENESS IN ACADEMY

TIC NA GESTÃO EDUCACIONAL: EFETIVIDADE NA ACADEMIA

LAS TIC EN LA GESTIÓN EDUCATIVA: EFECTIVIDAD EN LA ACADEMIA

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ABSTRACT: This study is the result of a monograph that aims to evaluate the contribution of Information and Communication Technologies - ICT in a postgraduate course in educational management, from the student's perception. It's characterized as applied research, with a qualitative approach, of the descriptive and exploratory type. The research instrument was an evaluation questionnaire, adapted from Bertolin and Marchi (2010). For the analysis of the data, was used the categorical analysis of Bardin (2011). It was found that the students rated the course as "good", with a consensus on the use of technological resources and the development of ICT skills. However, it was noticed that some resources need improvement when inserted in the classes because only the investment in ICT does not cause changes. There is also a need for the professional development of the teaching staff for the pedagogical and critical use of ICT in the teaching and learning processes, causing significant changes and reflections.

KEYWORDS: Management. Education. ICT. Formation.

RESUMO: *Este estudo é resultante de um trabalho de monografia e objetivou avaliar a contribuição das Tecnologias da Informação e da Comunicação – TIC em um curso de pós-graduação em gestão educacional, a partir da percepção dos discentes. Caracteriza-se como uma pesquisa aplicada, com abordagem qualitativa, do tipo descritivo e exploratório. O instrumento de pesquisa foi um questionário de avaliação, adaptado de Bertolin e Marchi (2010). Para a análise dos dados utilizou-se a análise categorial de Bardin (2011). Constatou-se que os discentes avaliaram o curso como "bom", havendo consenso no uso de recursos tecnológicos e desenvolvimento de habilidades em TIC. No entanto, percebeu-se que alguns recursos necessitam de aprimoramentos quando inseridos nas aulas, pois apenas o investimento em TIC não ocasiona mudanças. É necessário, também, desenvolvimento profissional do corpo docente para a utilização pedagógica e crítica das TIC nos processos de ensino e aprendizagem, a fim de provocar mudanças e reflexões significativas.*

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***PALAVRAS-CHAVE**: Gestão. Educação. TIC. Formação.*

***RESUMEN**: Este estudio es el resultado de una monografía y tuvo como objetivo evaluar el aporte de las Tecnologías de la Información y la Comunicación - TIC en un posgrado en gestión educativa, desde la percepción de los estudiantes. Se caracteriza por ser una investigación aplicada, con enfoque cualitativo, de tipo descriptivo y exploratorio. El instrumento de investigación fue un cuestionario de evaluación, adaptado de Bertolin y Marchi (2010). Para el análisis de datos se utilizó el análisis categórico de Bardin (2011). Se verificó que los estudiantes califican el curso como "bueno" y existe un consenso en el uso de recursos tecnológicos y desarrollo de habilidades TIC. Sin embargo, se advirtió que algunos recursos necesitan mejorar al insertarse en las clases, ya que solo la inversión en TIC no genera cambios. También existe la necesidad de un desarrollo profesional de los docentes para el uso pedagógico y crítico de las TIC en los procesos de enseñanza y aprendizaje, con el fin de provocar cambios y reflexiones significativas.*

***PALABRAS CLAVE**: Gestión. Educación. TIC. Formación.*

Introduction

Information and Communication Technologies-ICT has gradually been occupying spaces in the academy as didactic-pedagogical support. Therefore Barcelos, Passerino and Behar (2011) emphasize the importance of preparing teachers so that they can integrate technologies into their teaching practices and confirm the need to create new proposals for the integration of digital technologies in the teaching and learning process. These processes have an impact on educational management, on the organization of teaching or learning processes.

On the other hand, the term management is mentioned in the 1998 Constitution (BRASIL, 1988), in the Law of Guidelines and Bases of National Education - LDB (BRASIL, 1996) and in other legal instruments of the country's education systems. For Dias (2002, p. 11, our translation), "management is making use of all the necessary functions and knowledge to, through people, achieve the goals of an organization efficiently and effectively".

In the universe of linguists, management and administration are considered synonymous (DIAS, 2002). In line with this approach, there is an understanding that management would be a broader term than administration, as it is linked to the processes of participation, politics and democracy at school.

Dourado (2001) corroborates the concept of democratic and participatory management as a way to contribute to the precepts of civic education. Ideally, the Brazilian Federal Constitution (BRASIL, 1988) and the LDB (BRASIL, 1996) establish democratic management as the proper way to manage public schools and education systems.

The appropriation of technological resources by managers to improve the provision of services in educational institutions can collaborate with the development of shared or network management, given the reach allowed by its use. In view of this, the problem of this research came from the following question: is the use of ICT in the formation of teachers in educational management capable of supporting the management process in the schools in which they work or will work?

To answer the problem, the general objective was outlined from the understanding that knowledge about the use of ICT has some impact on management processes. Thus, the objective was to evaluate the contribution of ICT in educational management, whose specific consequences focused on: investigating the use of technological resources in everyday educational life (learning environment/software, videoconference resources) and assessing the level of motivation for the acquisition of skills in ICT, such as: the use of computers, mobile devices, among others.

The scientific importance for the execution of this research was linked to educational management, considering that it is through the characteristics and practices of this process that all actions in the educational process occur.

Methodology

It is characterized as applied research. According to Prodanov and Freitas (2013, p. 51, our translation), "it aims to generate knowledge for practical application aimed at solving specific problems. It involves local truths and interests". According to the problem to be investigated, the approach is predominantly qualitative and descriptive (GIL, 2016).

The data collection sources were selected based on the understanding that the knowledge and practice around the “educational management” axis could be identified with the condition of guaranteeing reliable data. Therefore, a federal institution of Higher Education in the State of Rio Grande do Sul, Brazil, was selected to offer the Postgraduate Course in Educational Management.

The students of this course were the participants, 21 students, representing approximately 68% of the class of the Postgraduate Course in Educational Management, edition 2019/1. The number of successful selections for this course was 35, with two substitutes, however, after the period of confirmation of vacancies and enrollments, 31 students enrolled and, of these 31, there were no dropouts informed to the

secretariat/coordination of the course, thus all still have an active registration and bond with the institution.

In addition to the selection criterion being the participation in a management course, it was inferred that the postgraduate program joins the professional in search of continuing education. Thus, the course students, as a rule, are already professionals in the field of education, which could qualify the conditions and analysis of the data collected.

The data collection instrument consisted of a course evaluation questionnaire, adapted from Bertolin and Marchi (2010, p. 142), based on a system of evaluation indicators. The questionnaire has 13 questions, covering three categories of analysis, which were defined a priori, as they constitute the questionnaire. Considering the three fundamental moments in the realization of an academic formation: entry, process and results. Students evaluated the questions quantitatively, indicating the degree of satisfaction (excellent, good, fair, bad, very bad).

For the analysis of the results, the content analysis proposed by Bardin (2011) was used as a reference. In the set of content analysis techniques, analysis by categories was used, listing three: input, process and results. In general, the operation and purpose of content analysis can be summarized as follows, a set of analysis techniques aimed at obtaining systematic procedures and content description objectives that allow the inference of knowledge related to the variables inferred from these messages (BARDIN, 2011).

The questionnaire was applied online, through the Google Form, with a link to the questionnaire being sent. The 21 participants were all active professors and upon accepting to participate in the research, they were aware of the objectives and procedures of the study, as they had previous access to the questionnaire and the Informed Consent Form (ICF), which provides all care for the ethics in research with human beings.

Field data were collected through the Education, Health and Inclusion Project 3. ed., registered at the GAP Projects Office with the number 053283 and approved by the Ethics and Registration Committee CAAE: 27550820.3.0000.5346.

Results and discussions

The evaluation process of Higher Education Institutions is increasingly present in universities, which invariably refers to the quality of education in the country. It is a complex and important theme in educational approaches, projects and practices. It is noteworthy that

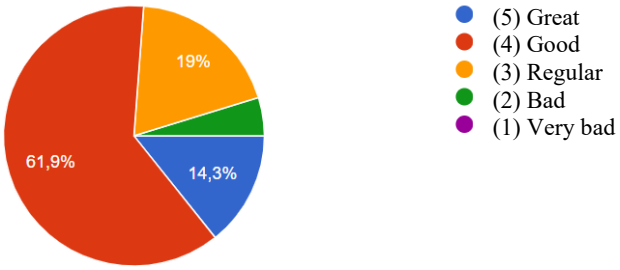
evaluation is seen as a management tool for the continuous improvement of courses/programs, with the participation of society.

Thus, it can be said that it is possible to assess quality in education through “a set of attributes, aspects or indicators about the educational inputs, process and results, or the relationships between them” (BERTOLIN; MARCHI, 2010, p. 134, our translation).

Therefore, the first analysis category, Entrance, contemplated issues related to the course infrastructure, discipline planning and participants' skills. The evaluation instrument used contained 13 questions, distributed among the three categories that should be answered from a scale arranged from great to very bad (great, good, fair, bad and very bad).

The evaluation of the infrastructure of the postgraduate course was carried out from the perspective of the students who entered the course in the (5) Great (4) Good (3) Regular (2) Bad (1) Very bad of 2019. Of the 21 graduating students, 13 evaluated the learning environments/ other technological resources used in the course of subjects such as “goo ng 61.9% of the participants; four teachers showed discontent when pointin ular” (19%); three indicated “great” (14.3%); and one teacher expressed dissatisfaction when signaling “bad” (4.8%). With this, it is clear that many resources, specifically related to educational technologies, need improvements and enhancements when inserted in classes.

Figure 1 – Specialization course infrastructure



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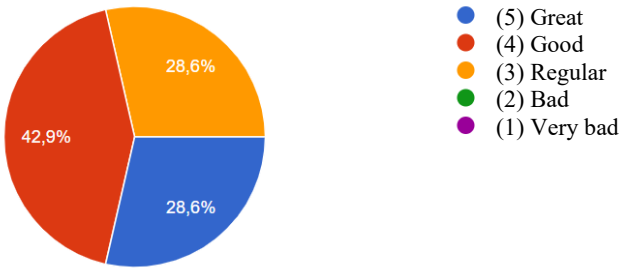
According to Marback Neto (2007, p. 171, our translation), institutional assessment “is a powerful and essential managerial and pedagogical instrument that involves measurement, revision and construction”. In this sense, the assessment carried out by educational managers in the process of completing a course provides support for the decision-making processes and implementation of results for the continuous improvement of the course.

The second question, referring to the skills and competences of the teachers for the development of the subjects, was evaluated by 42.9% (nine students) as "good", 28.6% (six

teachers) were satisfied when they indicated the option "great" and the remaining 28.6% (six students) were dissatisfied when indicating the alternative "regular". As for teaching skills, Lowman (2007) described a good university professor as someone who has the ability to create an intellectual stimulus and interpersonal empathy with his students. These two skills are relatively independent, on the other hand, the effectiveness of one of these categories can generate success in higher education. However, when a teacher makes use of both skills, he is likely to be considered excellent in any teaching environment.

Figure 2 – Skills and abilities of teachers in the development of subjects



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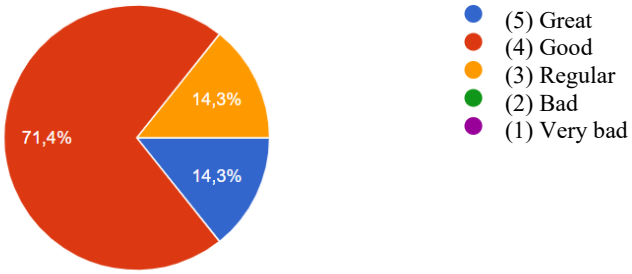
Afterwards, the participants evaluated their computer skills when entering the course. It can be observed that 71.4% (15 teachers) indicated that they were "good", three students (14.3%) "great" and three (14.3%) indicated that their skills were "regular". It is evident from this result that teachers in training, when carrying out their pedagogical praxis in the classroom and when faced with obstacles, must find solutions for the treatment of these.

Figure 3 – Computer skills when joining the course



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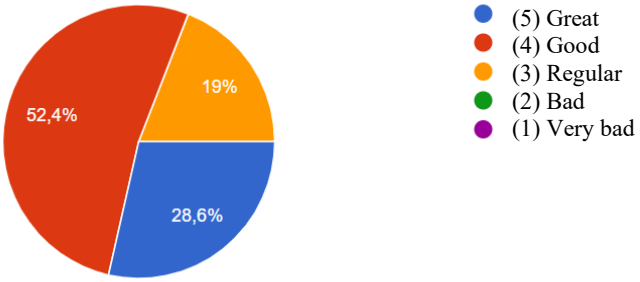
It is understood that the use of the computer as a didactic resource enriches situations of learning and knowledge elaboration, helping knowledge to acquire a greater degree of significance, expanding opportunities and, therefore, highlighting the potential of ICT in the educational context.

When the question was about the planning carried out by the teachers in the offer of subjects, including teaching plan, workload of distance education, teaching material, bibliography and media used, the results obtained show that six students (28.6%) rated the planning "great", 11 scored "good" (52.4%) and four teachers "regular" (19%).

Figure 4 – The planning carried out by teachers for the subjects



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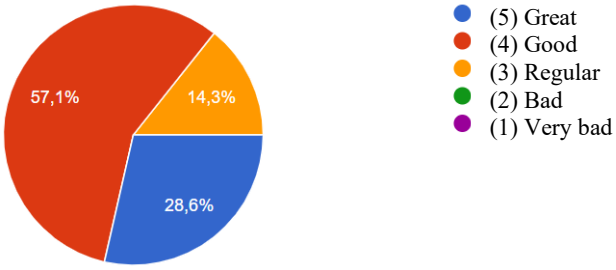
A positive aspect of this result is the appreciation and recognition of the work produced by the course's professors. Teaching planning is not only a function of the professors, but of the entire university and academic segment that contribute to expanding knowledge (coordination, secretariat, collegiate, rectory). The procedures, planning and teaching methodologies are the result of these interdisciplinary practices.

The second category of analysis, called Process, refers to the pedagogical and organizational context, so those characteristics are related to "teaching hours, teachers' dedication, access to and use of ICTs can make up the structure of process indicators" (BERTOLIN; MARCHI, 2010, p. 135, our translation).

In this category, the dialogic interaction developed between professor-student during the postgraduate course was evaluated. As a result, six students (28.6%) rated the dialogic interaction as "great", 12 indicated the interaction "good" (57.1%) and three students scored "regular" (14.3%). Collaborating with this discussion, Freire (1987, p. 93) emphasizes dialogue as "the meeting between men, mediated by the world to pronounce it". Thus, it presents a pedagogy based on the process of critical awareness of reality. In view of this, the

challenge of overcoming the contradiction between the oppressor-oppressed arises, as the oppressed often tends to host the oppressor's ideology, of one day looking like him, adhering to his posture, attitudes, tastes.

Figure 5 – Dialogical interaction developed between teacher-student during the course



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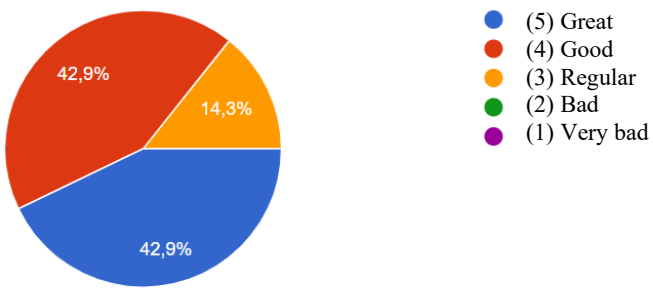
As for the guidance provided during the course, it is clear that only three teachers (14.3%) were not satisfied with marking the alternative "regular", in addition nine students (42.9%) concluded as "great" and another nine rated as “good” (42.9%). On this issue, Freitas and Souza (2018, p. 132, our translation) discuss the relationships between research, formation and knowledge production present in guidance work. Thus, the guidance process produces effects on the decision and definition of three aspects that imply the interactional development between mentors and mentees, “the thematic content of the research, the pace of work to be developed and the way to organize the work”. Becoming an advisor, most of the time, is still "the result of personal trajectories with the advisors themselves, by modeling, by experiences of eliminating what was experienced negatively, or even by forms of (re)affirming their authority" (FREITAS; SOUZA, 2018, p. 139, our translation).

Figure 6 – Guidance provided during the development of the monograph



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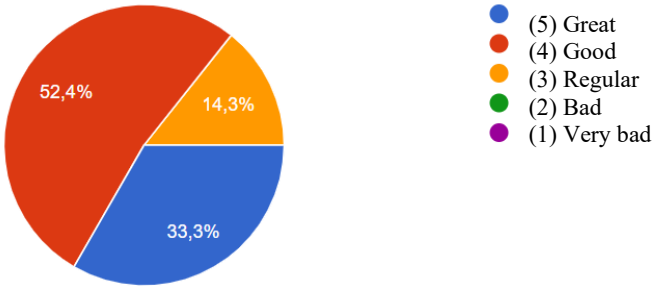
The technical-administrative support provided during the course is evidenced when considering that seven professors rated it as “great”, representing 33.3% of the participants. Eleven teachers (52.4%) in formation considered the technical-administrative performance "good" and three "regular" (14.3%), due to the delay in returning e-mails and questions regarding the course, such as dispensing with disciplines.

Figure 7 – Technical and administrative support provided during Specialization



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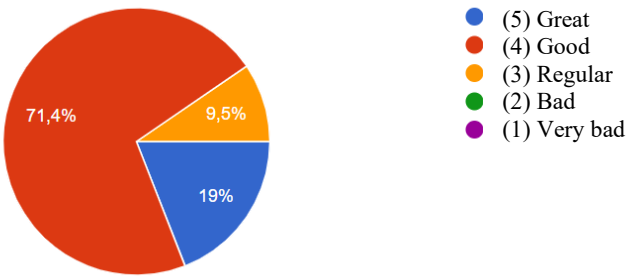
As for the articulation and adequacy between the in-person and distance moments covered in the subjects, four students indicated "great" (19%), 15 indicated that the articulation was "good" (71.4%) and two teachers evaluated it as "regular" (9.5%). Thus, the combination of face-to-face teaching with remote and/or online learning, known as hybrid teaching, one of the main trends of the 21st century, enables students to “learn anytime, anywhere, on any path, in any rhythm” (HORN; STAKER, 2015, p. 10, our translation).

Figure 8 – Articulation and adequacy between the in-person and distance moments (content and workload) of the subjects



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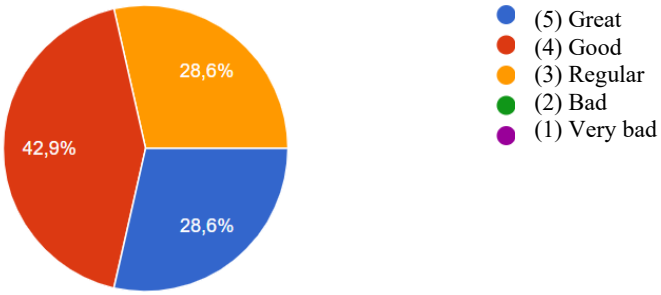
In this sense, it is noteworthy that Brazil has only two forms of institutional accreditation, face-to-face teaching and distance learning. In this sense, according to

Ordinance n. 2,117/2019 (BRASIL, 2019) which authorizes Higher Education institutions (HEI) to expand the workload of distance education in face-to-face undergraduate courses to 40%, due to the current Coronavirus pandemic (Covid-19), the expectation is the cost reduction of Higher Education Institutions (HEIs), as a consequence of the reduction in the use of physical space, electricity, cleaning, water, among others.

However, the Ministry of Education (MEC) when publishing Ordinance n. 343/2020 (BRASIL, 2020) which aims to continue the teaching-learning process during the period of the Coronavirus pandemic (Covid-19), determining the replacement of classes in-person classes using information and communication means and technologies, in this article called remote classes, reinforces that hybrid teaching practices aim at an education in an integral perspective for the 21st century, boosting the development of autonomy, learning and protagonism in learning. It was found that 71.4% of students rated this articulation of on-site and distance classes as "good", in general this demonstrates that adherence is positive, both to the content and the workload of the subjects. In other words, hybrid teaching makes the teaching and learning process more flexible and is viewed with optimism.

Therefore, the students performed the evaluation of the didactic-pedagogical practice developed by the course professors in the classroom. It was identified that six participants considered the practice "great" (28.6%), nine classified it as "good" (42.9%) and six considered it "regular" (28.6%). In this aspect, Franco (2016, p. 536, our translation) conceptualizes a pedagogical practice "as a conscious and participative action, which emerges from the multidimensionality that surrounds the educational act". That is, it aims to meet certain educational expectations, as a pedagogical practice is the practice of didactics.

Figure 9 – The didactic-pedagogical practice developed by the teacher in the classroom



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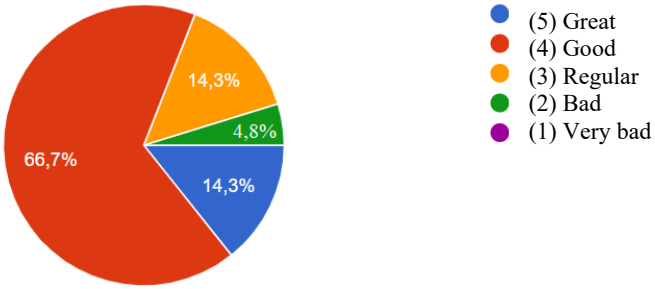
Thus, the meaning of didactics is the production of learning in students, through previously planned teaching processes. In short, the teacher, in the exercise of his teaching practice, may or may not exercise pedagogically. In other words, “his teaching practice, to become a pedagogical practice, requires at least two movements: the critical reflection of the practice and the awareness of the intentions that govern his practices” (FRANCO, 2016, p. 543, our translation).

While 28.6% of students considered the practice of teachers to be "regular", it is necessary to think of solutions, review the teaching plans, the methodologies used and even consider a teacher self-assessment, aiming at improving their pedagogical practice. However, this exercise requires teachers who are able to share with their peers the responsibility for improving their own performance.

However, the teacher does not transform the classroom alone, the pedagogical practices work as a space for dialogue, with the existence of a group, interacting through mutual exchanges, consequently building knowledge. Therefore, in the evaluation of student learning in the postgraduate course, three students considered it “great” (14.3%), 14 students considered it “good” (66.7%), three students considered it “regular” (14, 3%) and a teacher showed their dissatisfaction by marking the alternative “bad” (4.8%).

Figure 10 – Assessment of learning developed in the course



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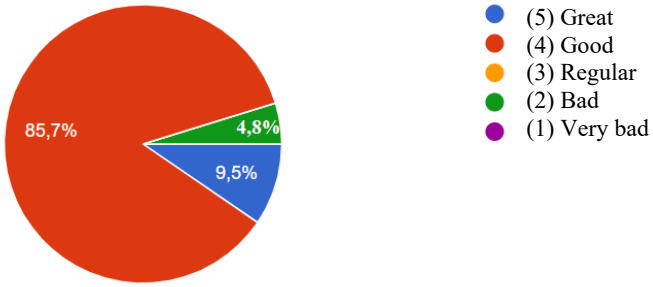
Faced with the issues addressed, student self-assessment becomes a fundamental method in course evaluation, as it brings conscious feedback on the trajectory that learners have traveled, their intellectual development, acquisition of skills, attitudes, helping teachers and managers in making decision. Concern is highlighted in relation to students who showed dissatisfaction, resulting in a total of 19.1% who signaled learning as “regular” and “bad”.

Finally, the third and last category of analysis, Results, proposes indicators to be considered on the objectives achieved. Thus, learning, skill development, autonomy,

initiative, organization of study time. (BERTOLIN; MARCHI, 2010). Based on these indicators, it is possible to assess the quality of disciplines in blended courses.

The assessment of learning and achievement in the disciplines of the graduate course in this category resulted in two students who indicated their learning and achievement as "great" (9.5%), 18 students considered it "good", representing 85.7% of the participants, and one student evaluated it as “bad” (4.8%).

Figure 11 – Assessment of learning and achievement of course subjects



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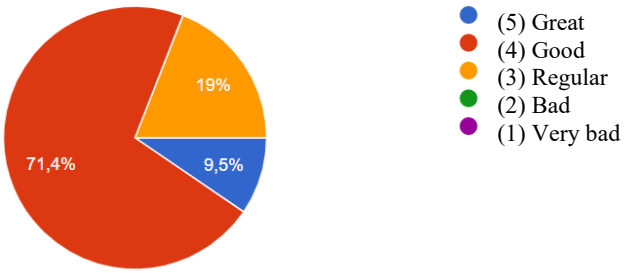
Regardless of the evaluation model adopted by universities in undergraduate and graduate courses, Franco (1997) suggests that there must be a redefinition, considering the student's social and historical bond, thus prioritizing objectivity, without discarding subjectivity. On the one hand, the student must be considered as an integral part of a social structure that has a portion of influence on their academic performance. On the other hand, the teacher must know the reasons and objectives of the evaluation so that, with the result of the evaluation process, discuss with the student, through feedbacks, an alternative to improve the performance of both. Therefore, one of the main objectives of the assessment is to verify the student's progress in the teaching and learning process.

Considering that 85.7% of the participants rated their learning and achievement in the subjects as “good”, it was found that the main contribution of the self-assessment was carried out, confirming its validity. In other words, verifying whether the chosen methodology reached the proposed objectives, whether it was the most appropriate and provided access to knowledge.

Regarding the development of skills in the use of ICT during the course, two students (9.5%) judged the development of their skills as “great”, 15 students (71.4%) considered it “good” and four teachers as “regular” (19%). Considering the need to promote education with the use of ICT and to maximize the use of available resources, some problems encountered such as the lack of extra-school time for graduate students, the difficulty in accessing the

virtual learning environment (VLE) together the restriction of hours for the use of the computer lab, produce a deficit of satisfaction for the students. In this sense, it is inferred that digital literacy and the development of skills and competences in the use of ICT can be developed by teachers.

Figure 12 – Development of skills in the use of ICT during the course



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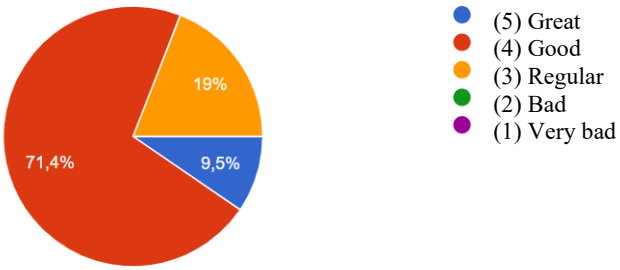
Questions about the students' assessment, which ends the questions, include: development of the capacity for autonomy and self-organization (time) during the course. Two students indicated “great” (9.5%), 15 students rated their development as “good” (71.4%) and four teachers judged their ability to be “regular” (19%).

Figure 13 – Development of the capacity for autonomy and self-organization



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The idea of autonomy can be identified with the defense of self-organization. For Pistrak (2009), the students' self-organization (self-direction) can be revealed in three capacities, namely: the ability to work collectively, the ability to work each task in an organized manner and the development of the creative capacity.

According to the author, promoting self-organization requires that students go through “[...] through a variety of organizational forms, which can be achieved by giving self-organization more flexible forms that adapt each time to new tasks” (PISTRAK, 2009, p. 123,

our translation). Likewise, the importance of teaching autonomy is highlighted, as both teachers and students are subjects of educational practice.

Finally, most of the activities and work carried out during the course required teamwork, which may be one of the reasons why 19% of the participants judged their ability to be regular, due to the fact that they have difficulty in carrying out work collaboratively, needing an adaptation, self-organization.

Relationship between input, process and result

By relating the three categories, it was possible to verify aspects that are fundamental, as Bertolin and Machi (2010) reinforce that the comparison between the outcome indicators and the input and process aspects and between the assessment of an interested subject and the self-assessment of other subjects involved, incorporates aspects of self-validation. Thus, as a suggestion for future work, the participation of the faculty would also be important, as it would allow a complete evaluation of the graduate course regarding the use of ICT.

Likewise, it is important to highlight that the participants evaluated the educational management course as "good", with a tie only in the question regarding the guidance provided by the teachers during the course of the course (great 42.9% and good 42.9%).

Furthermore, it was possible to observe that all indicators present in the course evaluation instrument, in their entirety, were considered “good”. With this, questions emerge for reflection and analysis that could be debated in the future with graduates, teachers and the management team of the course, such as, what would be missing to be considered great? What improvements are suggested?

Final considerations

This study aimed to evaluate the contribution of ICT in educational management, concluding that ICT are important tools for education and the trend is that they can be used increasingly in teaching and learning practices, as they constitute a means for the development of collective intelligence, promoting innovation, interaction, content creation and collaborative learning.

The use of technological resources in teaching and learning processes encourages the acquisition of ICT skills when the appropriate tools are adopted for each level of teaching and content to be learned. Some educational technology resources need improvement when

inserted in classes, as only the investment in the purchase of technological resources does not cause changes in the educational process. It is also necessary the professional development of the faculty for the pedagogical and critical use of digital technologies, in order to provoke significant changes and reflections.

It is believed that the training of educational managers, through the use of ICT, can transform their practice as an administrator, in order to develop new management proposals by using technological resources permeated by an interdisciplinary and democratic approach, favoring the participation of participants of the process.

With this, the use of ICT in education can give new meaning to the teacher's practice as manager, administrator and person. Possibly, this is one of the contributions of the study, demarcating an advance in scientific knowledge that implies the need to intensify and impose the use of ICT in the educational environment, until then considered of optional use.

Therefore, it is expected that the research integrates empirical and theoretical subsidies to discuss and reflect the process of management, evaluation and use of ICT, in a new era of education, in which the protagonism of ICT was evidenced imposed by the conditions sanitary services, but that tends to stay.

Finally, the contribution of the study carried out did not intend to exhaust the discussions related to the theme, assuming the limitations that are identified in applied research, but rather to awaken the possibility of developing new objects of investigation. As well as highlighting the importance of ICT in consolidating knowledge and pointing out its potential to help teachers and school managers in daily tasks and highlight the need for its application, helping their teaching practice and promoting digital inclusion, motivating students and teachers in the teaching and learning process.

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