The 3rd International Workshop of Innovation and Technologies (IWIT 2022)
August 9-11, 2022, Niagara Falls, Ontario, Canada

Analysis of the students' appreciation of teaching as a tool for managing educational processes.

Samara Romero[a], Gilma Camargo[b], Kadry Garcia[,c], Claudia Medina[d],*, Irmina Hernandez[e] , John Grimaldo[f]

a Universidad de la Costa, Colombia, b Universidad de la Costa, Colombia ,c Universidad de la Costa, Colombia, d Universidad de la Costa, Colombia, e Universidad de la Costa, Colombia, f Universidad de la Costa, Colombia

Abstract

Educational quality requires the evaluation processes of the different agents involved. At the higher education level, teacher evaluation is carried out. One of the inputs is the appreciation of teaching by students. The latter is carried out each semester for each of the courses directed by each professor; According to the educational institution, if the professor obtains a grade lower than 4.0, he will enter a follow-up program to improve the aspects identified as negative in his teaching practice. The research presents an analysis of the results obtained in the appreciation of teaching by students in the periods 2020-01 to 2021-01. These results allowed establishing two improvement options to generate preventive actions to improve educational quality.

1. Introduction

Teaching is an important challenge for the generation of changes that have a positive impact on society; in this sense, teachers are responsible for promoting the change through their leadership in the teaching role [1, 2]. In this context, teacher's evaluation becomes very important; therefore, the relevance as a variable to investigate. That is why

* Corresponding author. Tel.: +0-000-000-0000 ; fax: +0-000-000-0000 .
   E-mail address: cmedina4@cuc.edu.co

the role teacher plays in history is constantly changing, now on days, education faces new challenges towards teachers' characterization that did not face in the past [3, 4].

In accordance with the above, it is essential to establish the aspects related to the cognitive, attitudinal, and evaluative abilities and skills that characterize the teacher responsible for educational management; which should be oriented towards problem solving in this area [5, 6].

A broad and contextualized view of teachers' performance results are essential to consider their strengths and opportunities for improvement with the aim of having a positive impact on the assurance of learning. In this order of ideas, it has been understood that educational quality must be oriented to define performance evaluation, a fundamental strategy that allows understanding institutional behavior to favor commitment to society towards a comprehensive training that includes interpersonal, culture, climate, use of ICT and work dynamics so that teachers can develop and improve at different times [7-9].

This evidences the need for international and national Higher Education organizations to seek ways to strengthen pedagogical leadership. The investigative exercise described below analyzes the results obtained in the students' appreciation of teaching for the periods 2020-01 to 2021-01. As a result of COVID-19 pandemic, changes in the tool used for the assessment were evidenced during these periods. Among them, there was the need to change the learning modality from an on-site to a remote. The results obtained made it possible to demonstrate and establish preventive improvement options that would have an impact on management and educational quality.

2. Metodology

The methodology is structured in three phases, in the first the behavior of the appreciation of teaching during the semesters 2020-01, 2020-02 and 2021-01 is identified. In the second phase, the behavior of the appreciation according to its dimensions is analized to identify key points for improvement. The third phase, strengthening strategies are proposed based on the identified elements, which allow generating an improvement in educational processes.

3. Data Analysis and Results

Continuous improvement processes require evaluations and improving educational processes entails evaluating the different people and processes involved to identify aspects that can be improved. Evaluation is one of the processes relevant to this activity and is carried out by students, who evaluate the dimensions of the work developed by the teacher. In accordance with this, the following section presents a description of how the appreciation of teaching is conceived in the university institution, the behavior of the results obtained in the semesters 2020-01, 2020-02 and 2021-01, analysis of the behavior of the dimensions and the presentation of improvement proposals for educational processes.

3.1. Appreciation of teaching and the dimensions

For research purposes, the term 'Appreciation of teaching' is understood as a systematically organized set of phases, that aims to obtain feedback on the students' perspective on teaching and their satisfaction during the classes (Navarro Botero, 2020). This is done in the middle of the academic semester by each student to each one of the professors. The information is obtained from the curriculum, didactics, evaluation, and ICT dimensions.

Curriculum: The curriculum is based on theories and guidelines that allow identifying and operationalizing the objectives of an educational proposal, managing to respond to the requirements of the current context. It is understood as the quality of the teacher since it reflects the disciplinary domain of the content, the depth with which it is addressed,

and the capacity for cognitive transfer. Since the curriculum is a very important aspect in university organizations, curriculum processes are expected to have a high impact [10-12].

In the educational institution, the curriculum is conceived as a conglomerate of knowledge, methodological strategies, mediations, learning environments, and creative and innovative experiences that are developed with flexibility and are supported by substantive functions. In this dimension, aspects such as disciplinary domain, socialization of the subject program, sequencing in the developed units, coherence between the developed competencies, use of a second language in this subject, suggested bibliography, a relationship of the subject with other areas of knowledge, and their relation to virtual and remote modalities.

Didactics: Didactics is assumed as a discipline that is clearly developed in practice through interactive training experiences that allow the student to manage their own learning, making the development of skills viable. In this dimension, aspects such as specific cases of the context that promote understanding, use of relevant readings, use of technology in class, relevant methodological strategies in the framework of the virtual and remote modality, identification of the learning style, virtual platforms available, learning experiences based on collaborative work, independent student, and problem-based learning [13].

Evaluation: Evaluation is assumed as a constant, systematic, and formative process which allows the recognition of strengths and weaknesses for the assurance of learning, having feedback and the application of evaluation strategies as a cross axis. In this dimension, aspects such as the evaluation route proposed by the subject, evaluation strategies, feedback from the teacher, coherence between the contents and what is evaluated in the class, performance indicators, disposition, and impartiality of the teacher against the evaluation are explored [14].

ICT: Information and Communication Technologies (ICT) have been implemented in different aspects of society, as in the pedagogical field. This poses a change in the teaching and learning processes. According to Cavazos Salazar & Torres Flores, ICTs are required to enhance the teacher's actions and make student training more efficient [15]. It is assumed as a fundamental part of the educational process in the educational institution, exalting innovation and flexibility and allowing agile and safe access. The dimension was included in the 2020-1 semester due to the presidential decision to order Mandatory Preventive Isolation: this generated great changes, a reorganization of pedagogical strategies and a re-learning of ICTs.

ICT dimension explores aspects such as the modality in which the activities were carried out (virtual and remote), the use of communication tools between the teacher and the student, access to the digital material of the institution,

the strategy used for programming and delivery of activities, feedback when in doubt, and closing spaces to demonstrate the skills achieved.

3.2. Behavior of Students' Appreciation of teaching

The analysis of teacher appreciation by students starts from a general scope to a specific scope. This section presents an analysis of the behavior of the teacher's performance evaluation. Figure 1 presents a box-and-whisker plot with the results of the teacher evaluations for the periods 2020-01 to 2021-0.
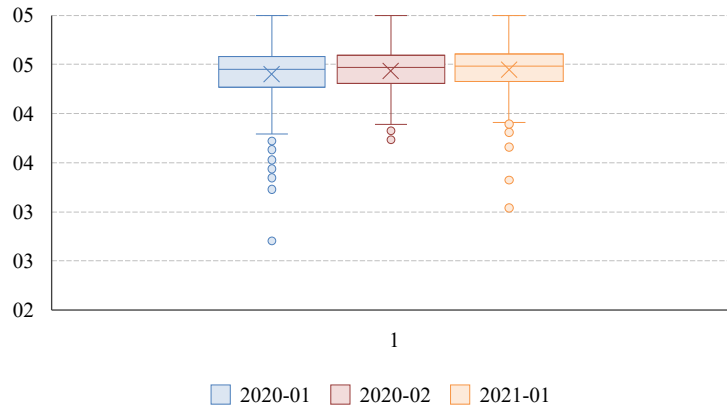

Figure 1. Distribution of teacher's performance evaluation in the periods 2020-01, 2020-02 and 2021-01.

The behavior observed in Figure 1 shows that there is no significant visual difference. The distinguishing features are the dots under each box. Table 1 presents the descriptive statistics of the three periods.

Table 1. Descriptive statistics of teacher evaluation in the periods 2020-01, 2020-02 and 2021-01

	2020-01	2020-02	2021-01
Data amount	655	457	558
Mean	4,403	4,436	4,449
Tipic error	0,011	0,010	0,010
Median	4,449	4,471	4,483
Mode	4,163	4,000	4,475
Standard desviation	0,276	0,222	0,239
Sample variance	0,076	0,049	0,057
Minimum	2,706	3,735	3,040
Maximum	5,000	5,000	5,000

The statistics of the three periods show a high degree of similarity in their mean, median, standard deviation and variance, differing in their mode. These results indicate that, regardless of the characteristics of the teacher, the teacher performance evaluation has an average higher than 4.0. On the other hand, the sample of professors shows a decrease

in the 2020-02 semester as a result of administrative decisions; the main one was to reduce the number of professors; however, as can be seen, there were no significant changes in the statistics of the three periods.

In general, no significant changes are observed in the teacher performance evaluation. Moreover, the decrease of teachers in the 2020-02 semester does not indicate a significant change either, therefore, the behavior of the four dimensions that make up the teacher performance evaluation are analyzed.

3.3. Behavior of the dimensions

For the analysis of the four dimensions, a frequency table is made. Table 2 contains the behavior of the teacher evaluation by dimension. The last column indicates the amount of total data, whereas the first row indicates the value of the teacher performance evaluation. The percentages indicate the number of teachers who have a teacher evaluation lower than the value.

Table 2. Frequency per semester and per dimension of the teaching evaluation.

Grad		3,5	3,6	3,8	4,0	4,1	4,3	4,5	4,7	4,9	5,0	Data
	2021-01	0,5%	0,5%	0,9%	3,9%	6,8%	19,7%	47,8%	88,0%	98,9%	100%	558
Curriculum	2020-02	0,0%	0,0%	0,4%	2,4%	7,2%	22,3%	51,0%	88,2%	98,2%	100%	457
	2020-01	0,9%	1,2%	2,6%	6,9%	11,0%	26,3%	55,7%	87,6%	99,7%	100%	655
	2021-01	0,5%	0,5%	1,4%	4,3%	7,5%	23,5%	53,4%	88,7%	99,3%	100%	558
Didactics	2020-02	0,0%	0,0%	1,1%	4,6%	8,8%	24,5%	56,9%	89,7%	98,9%	100%	457
	2020-01	0,8%	1,2%	3,5%	7,8%	11,3%	27,5%	59,1%	89,3%	99,4%	100%	655
	2021-01	0,5%	0,5%	1,4%	4,8%	8,2%	23,1%	48,7%	87,6%	99,1%	100%	558
Evaluation	2020-02	0,0%	0,0%	0,7%	4,4%	9,4%	23,2%	54,5%	89,5%	98,5%	100%	457
	2020-01	0,8%	1,4%	3,5%	7,5%	12,2%	28,7%	58,5%	88,9%	99,5%	100%	655
	2021-01	0,5%	0,5%	0,9%	3,9%	6,5%	19,2%	48,4%	87,1%	99,1%	100%	558
ICT	2020-02	0,0%	0,0%	0,4%	2,4%	7,2%	22,8%	50,8%	88,8%	98,5%	100%	457
	2020-01	0,5%	1,4%	2,7%	7,2%	10,5%	24,6%	55,3%	88,4%	99,2%	100%	655

According to table 2, the period 2020-01 presented a greater number of teachers with an evaluation below 4.0. This is because of the change from the face-to-face teaching modality to the remote teaching modality. This change forced a redesign of teaching strategies, evaluation and technological leveling, specially, for the different teachers who are not technological natives. Additionally, there were cases where the lack of technological resources, such as the internet, a good computer, among others, affected the quality of the process. In 2020-02, this percentage decreases, with didactics and evaluation being the elements with the largest number of teachers evaluated below 4.0. Finally, in 2021-01, an increase is observed, primarily, due to the hiring of new teachers. However, they had to adapt to the remote teaching methodology due to the pandemic. These results taken from an organizational perspective are important because they set an argument about the leveling process for new teachers and the construction of tools that ease this process.

The average percentage of teachers who scored below 4.0 is 5%, which does not allow establishing any classification criteria. It is evident that the percentages per semester in the dimensions are not the same; therefore, the data of each teacher was analized. When analyzing the individual data, it is identified that, although there are teachers with an evaluation below 4.0 in all dimensions, teachers have a global teaching performance evaluation equal to or

greater than 4.0 with at least one dimension below. This result generates an early warning to accompany the teacher and reduce the possibility that their teacher performance evaluation falls below 4.0.

3.4. Proposals for improvement

According to the results obtained, the following strategies can be proposed as an option for continuous improvement, aimed at prevention.

Early guidance to new teachers: It is proposed to carry out early and mandatory guidance for the training of teachers in institutional models, to standardize the academic processes carried out by the university and, therefore from the faculty to achieve levelling of appropriation and materialization in the classroom. It was observed that new professors tend to have low qualifications. Therefore, initial accompaniment and early orientation can positively impact their pedagogical work. The training must be oriented towards key aspects such as: the curricular model, the use and appropriation of the ICT tools used by the university and those that the teacher can use during their practice, among others. Additionally, a follow-up process must be carried out on teachers' appropriation of institutional models to achieve standardization.

Early warning: Early warnings will be a system that allows identifying areas of opportunity for improvement, to achieve efficient and effective teaching performance based on the dimensions of interest according to the CUC teaching performance evaluation model [16]. In Colombia, at the higher institution level and based on what the Ministry of Education perceives about pedagogy, it is assumed as a process of self-assessment and self-regulation that allows the teacher to generate their reflection and incorporate new didactic strategies. Therefore, this early warning strategy will enable teachers to review their practice and identify opportunities for improvement in their process through analysis and accompaniment. For research, designing an early warning based on the negative evaluation of at least one dimension will allow better monitoring and control of educational processes and establish a work plan with the teacher that helps him analyze his pedagogical action within the classroom lessons.

4. Conclusion

The research presented an analysis based on the assessment results of teaching performance in the periods 2020-01, 2020-02 and 2021-01. It was observed that professors obtain good results overall, with more than 95% of the population having a rating equal to or greater than 4. This result indicates that the processes carried out in the institution have favored the appreciation the students have for teaching. On the other hand, to generate continuous improvement, an analysis was made considering the dimensions of the survey.

In the analysis of the dimensions, a behavior is observed compared to that obtained in general, showing a significant change in the period 2020-01, in which Colombia began restrictive mandatory isolation. It is observed that the difference in the activities generated an impact for both the teachers and the students. Still, after the transition process, stabilization was achieved for the other dimensions.

These results obtained allow us to propose two options for improvement: the first, progress of ICT tools, a follow-up and implementation of a training process for the levelling of new teachers. Second, an early warning system according to the grade obtained in the four dimensions so that focused activities can be carried out and prevent the teacher from getting a grade below 4.

5.   References

[1]   Latorre BZ, Pérez VG, Calandín JG. La dimensión ética y ciudadana del Aprendizaje Servicio : una apuesta por su institucionalización en la Educación Superior. Revista Complutense de Educación 2019;30:1–15. https://doi.org/10.5209/RCED.55443.

[2]   Montero L, Gewerc A. La profesión docente en la sociedad del conocimiento. Una mirada a través de la revisión de investigaciones de los últimos 10 años. Revista de Educación a Distancia (RED) 2018;18.

[3]   Hill HC, Grossman P. Learning from Teacher Observations: Challenges and Opportunities Posed by New Teacher Evaluation Systems. Harvard Educational Review 2013;83:371–84. https://doi.org/10.17763/HAER.83.2.D11511403715U376.

[4]   Nenonene RL, Gallagher CE, Kay Kelly M, Collopy RMB. Challenges and Opportunities of Infusing Social, Emotional, amd Cultural Competencies into Teacher Preparation on JSTOR. Teacher Education Quarterly 2019;46:92–115.

[5]   Albarra Shidiq G, Promkaew S, Faikhamta C. Trends of competencies in teacher education from 2015 to 2020: A Systematic Review Analysis. Kasetsart Journal of Social Sciences 2022;43.

[6]   Delgado Coronado S. Perspectivas en torno a la formación docente y la posibilidad de una capacitación y actualización constante: Una mirada desde los actores en una universidad mexicana. Panorama 2019;13:33–41.

[7]   Tejedor G, Segalàs J, Barrón Á, Fernández-Morilla M, Fuertes MT, Ruiz-Morales J, et al. Didactic Strategies to Promote Competencies in Sustainability. Sustainability 2019, Vol 11, Page 2086 2019;11:2086. https://doi.org/10.3390/SU11072086.

[8]   Rüütmann T, Annus I, Kübarsepp J, Läänemets U, Umborg J. Updated Curriculum for Engineering Pedagogical Continuing In-Service Education. Lecture Notes in Networks and Systems 2022;390 LNNS:556–67. https://doi.org/10.1007/978-3-030-93907-6_59.

[9]   Marín-González F, Grimaldo-Guerrero J, Mendoza-Becerra M, Senior-Naveda A. Mapeo del conocimiento para la enseñanza interdisciplinaria en ingeniería 2020;13.

[10]   Casarini Ratto M. Teoría y diseño curricular. vol. VII. Trillas México; 2013.

[11]   Parra-Acosta H, Tobon S, Juárez-Hernández LG, Lopez-Loya J, Benavides-Olivera JG, García-Acosta VM, et al. Teachers Recognize the Need to Develop Their Competencies to Improve Medical Students' Performance. International Journal of Environmental & Science Education 2017;12:1985–1911.

[12]   Rowe AD, Zegwaard KE. Developing graduate employability skills and attributes: Curriculum enhancement through work-integrated learning. Asia-Pacific Journal of Cooperative Education 2017;18:87–99.

[13]   Louhab FE, Bahnasse A, Talea M. Towards an Adaptive Formative Assessment in Context-Aware Mobile Learning. Procedia Computer Science 2018;135:441–8. https://doi.org/10.1016/J.PROCS.2018.08.195.

[14]   Louhab FE, Bahnasse A, Bensalah F, Khiat A, Khiat Y, Talea M. Novel approach for adaptive flipped classroom based on learning management system. Education and Information Technologies 2019 25:2 2019;25:755–73. https://doi.org/10.1007/S10639-019-09994-0.

[15]   Cavazos Salazar RL, Torres Flores SG. Diagnóstico del uso de las tecnologías en el proceso de enseñanza y aprendizaje en la educación superior. RIDE Revista Iberoamericana Para La Investigación y El Desarrollo Educativo 2016;7.

[16]   Cantillo Hoyos B. Acompañamiento pedagógico: estrategia para la práctica reflexiva en los docentes de tercer grado de básica primaria. Universidad de la Costa, 2018.