

# Exploring the Impact of Gamification and Flipped Classroom in Teaching Administration and Management in Nursing: A Case Study

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**Abstract:** Background: Learning administration and management as a curricular unit is a great challenge for both students and teachers. The current generation of students is very different from the previous generation, and they are equipped to process information in diverse ways, which should be effectively utilized by undergraduate teachers. To observe and analyze the possible relationship between pedagogical methodologies, gamification, and flipped classroom, and the development of critical and reflective thinking, promoting learning from a constructivist perspective. Additionally, we examined students' perceptions of discipline using these methodologies. Method: A case study was conducted using a mixed-method approach, combining phenomenological and reflective research, and integrating qualitative and quantitative methods. Results: A syllabus was developed and structured according to the curriculum division into theoretical and practical classrooms, and pedagogical methodologies were adapted for the content. The results demonstrated student satisfaction regarding the use of new methodologies and technological innovation in teaching. Conclusion: There seems to be a positive relationship between the use of gamification and flipped classroom and the development of critical and reflective thinking. The introduction of new educational methodologies increased students' motivation and interest in the discipline, indicating a positive perception. However, further reflection, study, and research are needed to enhance the discipline's pedagogical strategy, considering its theoretical framework and practical applicability.

**Keywords:** Innovative didactic methodology; Learning; Management; Nursing; Teaching.

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## Introduction

The teaching of nursing has been subject to various strains in recent years, driven by different economic and technological changes experienced by society. Consequently, significant reforms are needed in educational, evaluative, and teaching research methods to adapt and enhance the training of future nurses.<sup>(1)</sup>

The current generation of students is unlike previous generations. They enter universities with knowledge, digital tools, information processing techniques, and diverse learning methodologies,<sup>(2-4)</sup> which are not always properly utilized by the faculty.

Furthermore, nursing education is starting to assert itself as a scientific discipline, moving away from the purely biomedical model, and

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embracing a new educational model inspired by constructivism. This promotes student-centered learning based on emotional and cognitive competencies facilitated by innovative pedagogical methodologies.<sup>(5)</sup>

The new learning methodologies aim to encourage interaction between students and the socially established knowledge provided by the instructor, fostering a critical and participatory response that creates a network of complex and dynamic interactions between professors and students.<sup>(6)</sup>

Similarly, teaching administration and management as curricular unit, represents a significant challenge for both students and instructors, as it is not inherently attractive to students. Most students report that the

subject is not among their top priorities, and often relegates it to a secondary role because of their inability to identify its practical utility.<sup>(1)</sup>

Regarding the teaching of administration and management in the nursing program, the goal is to provide students with the necessary conditions to develop cross-cutting competencies that facilitate the acquisition of basic skills in resources, materials, human management, care management,<sup>(1)</sup> and coping with and leading complex situations.

To prepare future nurses in this field, instructors face the challenge of fostering scientific and technological research, including the social, political, and economic aspects inherent to the discipline,<sup>(1)</sup> in an attractive and innovative way.

This study aimed to observe and analyze the potential relationship between gamification and the flipped classroom as pedagogical methodologies, as well as their influence on the development of critical and reflective thinking, which promotes student-centered learning from a constructivist perspective. Additionally, the study aimed to examine how these methodologies influence students' perceptions of subjects taught in the administration and management discipline within the field of administrative sciences during the seventh semester of the nursing degree program at a Spanish university.

### Materials and Methods

The selection of the case study methodology is based on the need to explore the complexity of this situation within its real context, which is university teaching in the discipline. This case study adopted a mixed approach by conducting phenomenological and reflective research and combining qualitative and quantitative research.

In the quantitative aspect, data related to students' perceptions of and satisfaction with the discipline and its teaching were analyzed. From a qualitative perspective, a preliminary introspective study of the discipline and the teaching methodologies implemented was conducted. Subsequently, a syllabus was developed for implementation in the 2021/22 academic year. This qualitative part was considered action research because the initially designed syllabus required constant appreciation, review, and updating during its implementation.<sup>(7)</sup>

Additionally, the qualitative perceptions of students regarding the discipline and the implemented methodologies were analyzed in the final part of the study. It is worth noting that this study followed the guidelines provided by the Consolidated Criteria for Reporting Qualitative Studies (COREQ), addressing items related to the study design and data

analysis. As the questionnaire was self-administered, the first domain of the COREQ was not considered.<sup>(8)</sup>

A total of 28 students voluntarily participated in the study, all enrolled in the "Administration and Management" course in the fourth year of the nursing degree program at a Spanish university. Sampling was intentionally and conveniently performed, and the inclusion criterion was enrolment in the discipline during the first semester of 2021/22. The questionnaire was completed in the classroom on the last day of the course and provided through a Quick Response (QR) code.

The research consisted of three phases. In the first phase, introspection of the discipline, the most used pedagogical methodologies in previous years, and gamification and the flipped classroom were conducted to explore their applicability to the discipline in question. In the second phase, a syllabus was designed by adapting the theoretical and practical classes in the discipline and introducing previously studied pedagogical methodologies during the first semester.

Finally, in the third phase, students' perceptions of the discipline and the innovative methodologies introduced were analyzed. Data were collected through a completely anonymous and voluntary questionnaire using Google Forms®.

The questionnaire was organized into three parts. The first part presented informed consent, briefly explaining the purpose of the research, objectives, means used, and confidentiality of the collected data. The second part consisted of 14 Likert-scale items inquiring about satisfaction with the discipline and the introduced methodologies. The third part allowed for the qualitative extraction of students' personal perceptions through four open-ended questions.

This questionnaire enabled the exploration of variables such as "innovative teaching methodologies", "gamification", "role-playing", "Kahoot", "flipped classroom", "practical class", and "lecture". It did not include any variables that could provide personal or identifying information and no contact data of the participants were collected. The study obtained ethical approval from the university's ethics committee prior to its implementation (16.11.2020).

### Results

The discipline in question is taken during the seventh semester of the degree course, with a weighting of three ECTS and 30 hours of face-to-face instruction, complemented by 45 hours of individual mandatory personal work (Table 1).

**Table 1.** Administration and Management in Nursing discipline hours distribution

Activities	Hours	Activities	Hours
Onsite Methodology	40%	Offsite Methodology	60%
Theoretical courses	15	Autonomous work	30
Practical courses	12	Preparing evaluation	15
Mentoring	3	Total hours	75

The syllabus was structured considering the division of the discipline's program into theoretical and practical classrooms, which allowed us to balance the content and adapt it to students' needs, providing a wider range of possibilities for the introduction of selected pedagogical methodologies.

The planning of theoretical content focused on expository methodology or lecture-based teaching, which incorporated debates and

participatory reflection, thus employing a mixed method in this pedagogical procedure. Students were encouraged to engage in individual work by reading, analyzing texts, and completing exercises.

On the other hand, gamification and flipped classroom were included as learning resources in the practical classrooms. Syllabus planning was approved by most surveyed students regarding the relationship established between theory and practice (Table 2).

**Table 2.** Student satisfaction (N=28) with the employed methodology 2021/22.

Statements *	1		2		3		4		5	
	N	%	N	%	N	%	N	%	N	%
The planning of the practical courses has been coherent, relating to the theoretical teaching, supporting my understanding, and learning.	2	7,1	0	0,0	4	14,3	15	53,6	7	25
The correlation between theory and practice seems appropriate to me.	0	0,0	1	3,6	2	7,1	22	78,6	3	10,7
The active incorporation of innovative didactic teaching methodologies has facilitated my understanding and assimilation of the concepts	1	3,6	0	0,0	2	7,1	11	39,3	14	50
Gamification as a learning resource makes the subject more interesting	1	3,6	1	3,6	5	17,9	12	42,9	9	32,1

\*1 - Strongly disagree; 2 - Disagree; 3 - No agreement or disagreement; 4 - Agree; 5 - Strongly agree

#### *Expository Method or "Lecture-based Teaching"*

This methodology is one of the most used in nursing education, and although it has recently been heavily questioned in university teaching, it remains necessary for the transmission of knowledge by an expert in a particular area.<sup>(9)</sup> The aim of this case study was to stimulate students' curiosity and critical thinking and promote the development of individual learning through a final moment of debate and discussion of the topics.

The focus was centered on students and their learning process. Active participation was encouraged by pre-structuring the class, including student intervention and dialogue during the exposition, breaking disinterest, and regaining students' attention at strategic moments,<sup>(9)</sup> thus transforming this teaching practice into a mixed methodology.

#### *Group Work Method*

Group work, more than a methodology, is a powerful tool for students, as it promotes inclusiveness, creates a sense of security, and allows them to overcome inhibitions while taking responsibility and learning from interactions within the group. For learning to be consolidated, it needs to be experienced and transferable, and the mere act of participating and sharing increases the generated knowledge.<sup>(9,10)</sup>

Problem-Based Learning (PBL) was included in this study. Using a real problem as the central theme of the activity generated debate among the student groups. This activity encourages student research to find necessary information for collaborative problem solving.<sup>(9)</sup> The planning of practical classes was based on this methodology and the benefits of participatory techniques in the construction of learning.

#### *Gamification and Information and Communication Technologies (ICT)*

This category encompasses almost all currently used teaching techniques and methods. It ranges from lectures conducted in traditional classrooms to techniques used in flipped classrooms, as well as search engines necessary for group work.<sup>(1)</sup>

Regarding pedagogical methodology, gamification allows the adaptation of game elements and dynamics to teaching to enhance motivation, help solve problems, and achieve educational objectives.<sup>(9)</sup>

It is important to note that the purpose is not the game itself but rather the mechanism or information acquired through it, differentiating learning from entertainment. This methodology was used both at the beginning of the class to assess the internalization of previously addressed ideas and concepts and at the end, as a summary and review, enabling the internalization of specific learning.<sup>(1,9)</sup>

#### *Flipped Classroom*

The flipped classroom is a pedagogical strategy that combines synchronous and asynchronous learning. It is a mixed methodology in which part of the learning takes place at a distance and beforehand, facilitating the development of activities that are subsequently conducted in the classroom.<sup>(2,11)</sup>

It is an active learning methodology that follows the constructivist learning paradigm.<sup>(2)</sup> Here, rather than theory, information is transmitted, and the student is at the center of learning, responsible for constructing their own knowledge by understanding and processing it, thus finding meaning that allows for the internalization of information based on their prior knowledge.<sup>(12)</sup>

In our situation, this methodology allowed the creation of a favorable environment for active learning during synchronous moments through problem solving, discussing care needs, and exploring healthcare

models. These topics were previously explained and explored by students during asynchronous learning.

By analyzing the planned and implemented methodologies, it was observed that the introduction of gamification in practical classrooms not only made them more engaging but also significantly increased student participation. Its incorporation facilitates the understanding and internalization of concepts previously explained in theoretical classrooms.

The most significant innovative didactic methodologies included interactive application "Kahoot", card games to identify the "Misconcept" within a specific topic, role-playing games used to identify and understand leadership and its types, and flipped classroom, providing prior input of theoretical concepts necessary for subsequent classroom discussions. The achieved results can be seen in (Table 3).

**Table 3.** Student satisfaction (N=28) with the didactic innovation introduced.

Statements*	1		2		3		4		5	
	N	%	N	%	N	%	N	%	N	%
The flipped classroom methodology facilitates interaction and discussion in the classroom.	1	3,6	4	14,3	6	21,4	11	39,3	6	21,4
The flipped classroom methodology is more appropriate to me than the lecture or master class.	2	7,1	3	10,7	5	17,9	13	46,4	5	17,9
The card game "Misconcept" seems to me an appropriate methodology to understand and integrate the health care models previously studied.	1	3,6	3	10,7	0	0,0	12	42,9	12	42,9
Role-playing seems to me appropriate and facilitating methodology for understanding and assimilating the concept and types of leadership.	1	3,6	1	3,6	2	7,1	14	50	10	35,7
The use of the Kahoot application as a gamification tool promotes a stronger involvement and personal study within the discipline.	0	0,0	1	3,6	2	7,1	14	50	10	35,7
The inclusion and use of gamification and new technologies in the subject creates an interactive, motivate and attractive teaching environment.	0	0,0	1	3,6	4	14,3	15	53,6	8	28,6

*Qualitative Analysis*

Qualitative analysis of student perception was conducted using *Atlas.ti* software with previous coding of categories and subcategories (Figure 1). This was based on constructivist pedagogical theory, which

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promotes student-centered learning in a practical and active manner, developing students' own cognitive strategies. Benner's perspective, which advocates nursing education to be based on experiential learning fostered by critical reflection on clinical practice, also influenced the analysis.<sup>(5)</sup>

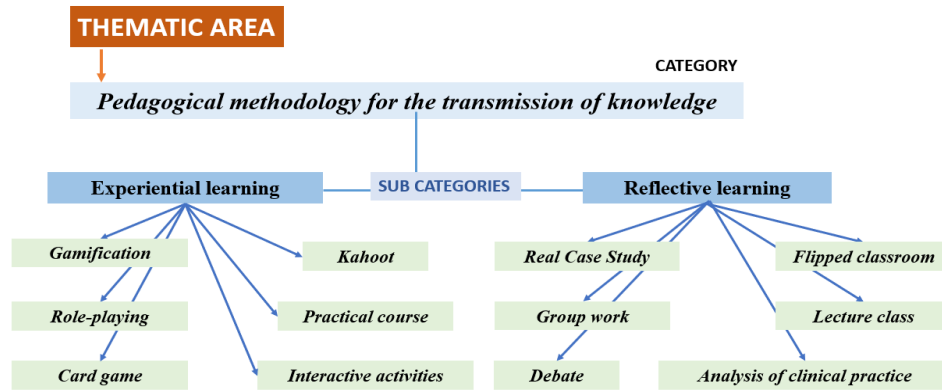


Figure 1. Category tree, subcategories, and their code network

Qualitative analysis of the collected responses yielded several noteworthy observations. Regarding the open-ended question *Which methodology has most benefited your learning?* the following observations were made: “(...) participation in activities”, “(...) gamification” and “(...) interactive and fun classes”.

In response to the question *Which methodology did you like the most?* the students highlighted: “(...) the didactics used”, “(...) the versatility of presenting the subject”, “(...) interactive work with more enjoyable games”, and “(...) the use of visual presentations that promote a more organized class”.

When asked *What other methodology would you suggest or would you have liked to use?* the students made very relevant proposals, including “(...) watching documentaries and videos” and “(...) adding other games to continue with gamification”. Some responses indicated that “(...) everything seemed very appropriate” and “(...) I really liked the methodology used”.

Concluding the analysis with the question *What are your suggestions as corrective method to improve the practical classes of the Administration and Management in Nursing course?* the students made pertinent suggestions, including “(...) exemplifying practices through debates or real coordination situations”, “(...) using more practical case studies”, and “(...) creating diagrams to facilitate collective understanding”.

## Discussion

According to Huber, nursing administration can be viewed as a combination of leadership creativity, scientific knowledge, and management skills. These elements are applied in practice to organize healthcare services and plan and coordinate care delivery in a positive work environment.<sup>(13)</sup>

The author states that the design of knowledge in the discipline comes from three primary sources: nursing theory, management theory, and leadership theory. These sources are indivisible and need to be articulated in teaching.<sup>(13)</sup>

Santos et al., conducted an integrative review of the most used educational methodologies in nursing administration and management teaching, as this area has been less studied. The authors found that the prevalence of individual studies and group work methodology was the most frequently used pedagogical technique.<sup>(1)</sup>

They categorized pedagogical strategies into four categories: “independent work method”, “group work method”, “expository or mixed method”, and “use of new technologies”.<sup>(1)</sup>

Regarding the “independent work method”, Santos et al., highlight strategic situational planning, problematization, and case study as teaching techniques.<sup>(1)</sup> These techniques are similar to those used in the present case study, such as task-based exercises for problem solving and the analysis of real situations.

The flipped classroom is one of the techniques that we used extensively, although it was not included in Santos' research.<sup>(1)</sup> According to Turull, this technique is relevant, as it provides students with essential concepts or materials for individual critical thinking, improving problem-solving, and class discussions.<sup>(9)</sup>

This methodology intentionally moves certain content outside of the classroom through guided activities, tasks, and multimedia resources. It aims to provide free time in the classroom for deeper learning activities that require more reflection, analysis, and teacher-guided discussions.<sup>(2,9)</sup>

In this study, this methodology was applied to easily assimilate the content necessary for subsequent interactions in practical classes, particularly those requiring personal calculations. It was positively perceived by 64.3% of the students (17.9% strongly agree and 46.4% agree), who felt that this methodology suited them better than traditional lectures.

Although individual work by students has increased in the university context, it is considered necessary, but insufficient. The author argues for the introduction of small-group work and group-class discussions to enhance the learning process.<sup>(9)</sup>

Regarding the “group work method” category used by Santos, both authors and researchers used the same terminology. Santos et al., highlighted problematization, debate, role-playing, seminars, and project workshops as the most used pedagogical techniques.<sup>(1,14)</sup>

Similarly, in the present case study, techniques such as role-playing, group dynamics, and problem-based learning were used. According to Turull, sharing and participating enhance knowledge acquisition.<sup>(9)</sup>

Role-playing is particularly useful for understanding and assimilating the concepts of leadership and its types. Students agreed (50%) and strongly agreed (35.7%) that it was an appropriate and facilitative methodology for learning about existing leadership models and

the implications of leadership styles on team members, aligning with the author's findings.<sup>(9)</sup>

Several authors have described the importance of introducing active, collaborative, and interactive methodologies in classes where communicative and multidirectional relationships within the group are valued, which are essential for leadership. This, in turn, is inherent in nursing management and administration. For learning to be consolidated, it must be experienced and practiced.<sup>(2,3,9)</sup>

In the "expositive or mixed method", Santos et al., included lecture-style classes and lecture-style classes with interactive dialogue, indicating a clear influence of the traditional teaching method in these techniques.<sup>(1,15)</sup>

This category was also used in the case study, specifically lecture-style classes with interactive dialogue in relation to the theoretical classroom. Most students affirmed their agreement (53.6%) and strong agreement (25%) with the class planning and pedagogical methodology used, highlighting the introduction of debates and interactive dialogue.

Considering Turull's observation, it is crucial to differentiate the lecture-style class from the strictly transmissive and unidirectional classes and prevent the former from becoming the latter. The former allows for student intervention, arousing their involvement and motivation towards learning. In contrast, in the latter session, the message is unidirectional, disregarding the characteristics of the students and their participation.<sup>(9)</sup>

Lastly, regarding the category of "utilization of new technologies" identified by Santos et al., they found that the virtual learning environment and online classrooms were the most used techniques. These pedagogical strategies have been described as interactive tools that facilitate learning, enabling students to easily assimilate verbal information.<sup>(1,16)</sup>

The use of new technologies is inherent in all currently employed techniques and methods in most categories, ranging from lecture-style classes to flipped classrooms, and involving search engines for group work.

In comparison to Santos' study, the virtual learning environment and online classrooms are primarily perceived by researchers as tools rather than as strictly pedagogical techniques. In this study, this category can be described as the "Implementation of Information and Communication Technologies".<sup>(1,16)</sup>

In contrast to Santos et al., this study has included all the resources and techniques inherent to gamification, as they mostly rely on new technologies. Regarding the use of the interactive application Kahoot, this study found that it promoted social interaction among students, fostering both individual and collective learning (53.6% strongly agreed and 28.6% agreed).

Similarly, it can be observed that the use of this application as a gamification tool in the subject reinforces previously acquired knowledge, increasing student involvement and personal study (35.7% strongly agree and 50% agree).

In the university context, the intention is to motivate and engage students in a game to solve the proposed problem and promote their learning. Most of the time, this involves the use of new technologies, although other types of resources can be employed in the game.<sup>(9)</sup>

It is also evident that the inclusion and use of gamification and new technologies in the subject creates an interactive, motivating, and

appealing teaching environment (28.6% strongly agree and 53.6% agree).

It is worth noting one of Turull's statements in his university teaching manual, where he emphasizes the importance of always considering that the purpose is not the game itself but rather the mechanism or information acquired through it, distinguishing between learning and entertainment, as there is a fine boundary between the two.<sup>(9)</sup>

This study has certain limitations. The main reason for this was the small number of students who participated in the study due to the Covid-19 pandemic. Additionally, there is a scarcity of recent research published in this field, highlighting the need for further investigation into nursing management and administration.

Through this research, the aim is to bring visibility to the discipline, which, although not directly addressing care or the provision of care, topics that usually motivate studies are intimately connected to all aspects of care management and planning, enabling its delivery with the highest possible quality. Therefore, further research, study, and theorizing are needed to reinvent and enable the discipline to emerge as more current, with well-identified competencies, to better educate future nursing leaders.

## Conclusions

Regarding nursing education, specifically the instruction in the discipline, this study highlights the importance of student engagement in their formation and preparation as future professionals. The results obtained through the application of the syllabus, observation, and analysis of student perception were satisfactory, recognizing the benefits provided by the pedagogical methodologies used in individual learning.

There seems to be a positive relationship between the use of gamification and the flipped classroom approach, and the development of critical and reflective thinking. These interactive and didactic methodologies, designed and tailored to the content, have been shown to increase students' motivation and interest in the discipline, allowing for debate, participation, and controversy.

It is worth noting that traditional lecture-based methodology needs to be complemented with other pedagogical techniques that promote meaningful learning, shifting the focus from the teacher to the student. Emphasis is placed on the importance of teacher competencies and profiles in the field, their involvement and professional and teaching experience, as well as their ability to transmit knowledge and proactively and innovatively influence critical reflection in the learning process.<sup>(10)</sup>

Finally, we hope that this study can prompt reflection among teachers in the field regarding their own teaching competencies as well as the techniques used in curriculum design and their own research in the discipline. This is done with the aim of improving clinical practice and nursing leadership, justifying the need to explore and investigate the thematic area from the perspective of students, teachers, and professionals.

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## References

1. dos Santos JLG, de Souza CSBN, Tourinho FSV, Sebold LF, Kempfer SS, Linch GF da C. Didactic strategies in the teaching-learning process of nursing management. *Texto e Context Enferm*. 2018;27(2):1–12.
2. Escrig-Tena AB, Segarra-Ciprés M, García-Juan B, Salvador-Gómez A, Flor-Peris ML, Alexandra Badoiu G. Evaluación de una experiencia de flipped classroom. *Rev Tecnol Cienc y Educ*. 2023;24:33–70.
3. Meyliana, Sablan B, Surjandy, Hidayanto AN. Flipped learning effect on classroom engagement and outcomes in university information systems class. *Educ Inf Technol [Internet]*. 2022;27(3):3341–59. Available from: <https://doi.org/10.1007/s10639-021-10723-9>
4. Murillo-Zamorano LR, López Sánchez JÁ, Godoy-Caballero AL. How the flipped classroom affects knowledge, skills, and engagement in higher education: Effects on students' satisfaction. *Comput Educ*. 2019;141(June).
5. Moreno CM, Barragan JA. La práctica pedagógica del docente de enfermería: del conductismo al constructivismo. *Prax Saber*. 2020;11(26):e10255.
6. Simon E, Jezine E, Vasconcelos EM, Ribeiro KSQS. Active teaching-learning methodologies and popular education: Agreements and disagreements in the context of health professionals' education. *Interface Commun Heal Educ*. 2014;18:1355–64.
7. Roa IDA. Estudio De Caso : Una Estrategia De Aprendizaje Significativo Case Study : a Meaningful Teaching Strategy for. *Rev Paradig Socio-Humanisticos [Internet]*. 2020;2(1):17–25. Available from: doi: 10.26752/revistaparadigmash.v2i1.473.
8. Tong A, Sainsbury P, Craig J. Consolidated criteria for reporting qualitative research (COREQ): A 32-item checklist for interviews and focus groups. *Int J Qual Heal Care*. 2007;19(6):349–57.
9. Turull Rubinat M. Manual de docencia universitaria [Internet]. Octaedro. 2020. 259–269 p. Available from: <https://dialnet.unirioja.es/servlet/articulo?codigo=7676942>
10. Llobet JR, Álvarez MR, Velez OC. Aprendizaje Basado en Problemas, Estudio de Casos y Metodología Tradicional: Una Experiencia Concreta en el Grado en Enfermería. *Procedia - Soc Behav Sci [Internet]*. 2015;196(July 2014):163–70. Available from: <http://dx.doi.org/10.1016/j.sbspro.2015.07.029>
11. Marqués M, Badía JM. ¿Qué nos dicen los estudiantes sobre lo que hace que funcione la clase invertida? *Jenui* 2021. 2021;6:51–8.
12. Subramaniam SR, Muniandy B. The Effect of Flipped Classroom on Students' Engagement. *Technol Knowl Learn [Internet]*. 2019;24(3):355–72. Available from: <https://doi.org/10.1007/s10758-017-9343-y>
13. Huber D. Liderazgo y administración en enfermería. McGraw-Hill Interamericana Editores, editor. 1999. 1–647 p.
14. Lima RO de, Vargas CO, Wall ML, Peres AM. The problematization method applied to the subject nursing administration. *Invest Educ Enferm [Internet]*. 2012;30(2):269–76. Available from: <http://www.scielo.org.co/pdf/iee/v30n2/v30n2a13.pdf>
15. Celento DD, Tavares CM de M. Students' evaluation regarding the teaching of health system management. *Online Brazilian J Nurs*. 2011;10(2).
16. Okagawa F, Bohomol E, Cunha I. Specialization course in nursing management: improvement proposals from students' perspective. *REME Rev Min Enferm*. 2014 Jun 1;18.



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