

Green Environmentally Sustainable Flipped Classrooms Using Social Networks

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Abstract---The objective of this study is to implement the model of flipped classrooms through the use of social networks to improve the attendance and academic performance of master students in management of virtual environments for learning (600 UCSM Scholarship) in the province of Mariscal Nieto, Moquegua region. To this end, a non-experimental cross-sectional design study was carried out. In addition, the study was explanatory, the sample was composed by 55 students from the Master's Scholarship 600, who were interviewed using a closed-question interview guide as an application tool. The results show that 25 students (45.45%) responded that they "always" accessed the virtual classroom through social networks to interact with class sessions; 31 students (56.36%) responded that they "strongly agree" that to produce monographs is easier when the teacher relies on audiovisual resources such as the virtual classroom; 20 students (36.36%) responded that they consider this method of inverted classroom project as "strongly didactic"; and finally 26 students (45.45%) responded that the use and management of flip classrooms allowed them to improve their attendance.

Keywords--- Flipped classroom, Social networks, Master's degree.

I. INTRODUCTION

Traditional education is no longer viable today. In light of technological development and the adoption of various and diverse technologies at the education field, the student has become into a vital element in learning through student-centred learning environments. In the last 30 years, university education and traditional conferences in particular have been strongly criticized. The main criticism has thrown light on the following: students are passive in traditional classes due to the lack of mechanisms that guarantee intellectual commitment to the material, so that the attention of students decreases rapidly, the pace of classes does not adapt to all the needs of students and thus traditional classes are not suitable for teaching higher order skills such as application and analysis (Huxham, 2005; Young, Robinson y Alberts, 2009).

The new educational paradigms aim at student-centered teaching, where peer collaboration, active participation and the development of higher order communication and reasoning skills are fostered (Mestre, 2001).

Educational institutions worldwide strive diligently to keep up with technological development and the use of modern methodological trends in the educational process, through the gradual fusion of interactive learning methods or strategies, such as flip classroom, active learning, cooperative learning, etc., which play an important role in enhancing the positive role of the learner during the educational process by providing students with content before

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class through the use of technology, which allows for exploiting class time in discussion, problem solving, creation, synthesis and application.

Among the technological tools currently most influential among the student community, the use of social networks and the growing supply of mobile devices that allow access to such networks stand out. From this perspective, it is important that institutions and teachers develop strategies to take advantage of these resources and conduct research to know the impact of these resources on education.

The flipped classroom emerged from the research of Lage, Platt and Teglia (2000) and practically by Bergmann and Sams (2012). This model underwent an evolution parallel to that of educational software, and it was in 2012 when the inverted class emerged as an investment in the dynamics of classroom work defined as "What is traditionally done in class is now done at home, and what is traditionally done as homework is now completed in class" (Bergmann and Sams 2012, p. 13).

In the *flipped classroom*, the theoretical or conceptual part of the classes are received at home, through videos, forums, conversations, mail, social networks and other tools and resources based on ICT, which enables a permanent interaction of the student with the teacher and his classmates; in fact, the practical part is done in class with the collaboration of all and relying on technologies (Rivera and Garcia, 2016).

The *flipped classroom* is no more than a previous read-out or preparation of the didactic material presented by the teacher prior to a class, proposing reflexive, collaborative and participative tasks. However, with the help of ICT, a real operative is achieved, which facilitates students' access to enriched content, in an attractive format, anywhere and at any time (Davies, Dean and Ball, 2013).

There are many technological tools and online platforms that can be used to implement the flipped classroom, such as Blackboard LMS, Google Docs, Wikis, blogs, Facebook, etc. For example, social networks allow students to express themselves, build relationships with others, and meet the demands of their education. The technological development achieved in the society of the new century accompanies modern educational trends (Vidal et al., 2015).

The *flipped classroom* also has the virtue of being an optimal tool for all types of students, from the most difficult to the most capable. It has the great advantage of teaching students in their individual rhythms, which makes it easier to customize the education to the rhythm of the student. This model can be ideal for the development of the talent of the most capable (Venkatesh et al., 2003).

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In addition, *flipped classroom* can be applied in all curricular areas; primary education, secondary education, higher education and even adult education. (Blasco, Lorenzo & Sarsa, 2016).

It is important to note that several studies confirm that students enjoy learning at their own pace and prefer an inverted classroom to traditional approaches. (Butt, 2014; Larson & Yamamoto, 2013; McLaughlin et al., 2014; Roach, 2014; Gilboy et al., 2015; Zacarías, Barrios & Córdova, 2016 & Benites, 2018).

The objective of this research was to implement the model of inverted classrooms with the use of social networks to improve the attendance and academic performance of students of master's degree in management of virtual environments for learning (600 UCSM Scholarship) in the province of Mariscal Nieto, region of Moquegua. This was based on previous theory and empirical studies, considering that the inverted classroom model seems to address challenges and pave the way for active learning strategies by getting class time used to incursion into higher levels of Bloom taxonomy, such as application, analysis and synthesis.

II. MATERIAL AND METHODS

The present research was based on a non-experimental transverse or transectional design, as it "deals with collecting data in a single moment and in a single time. Its purpose is to describe the variables and analyze their incidence and interaction at a given moment, without manipulating them" Martins and Palella (2014, p. 94). In addition, the study is explanatory because "its interest is focused on explaining why a phenomenon occurs and in what conditions it manifests itself or why two or more variables are related" (Martins and Palella, 2014, p. 95). Fifty-five students were evaluated using a closed-ended interview guide as an application tool for Master's Scholarship 600 students.

III. RESULTS

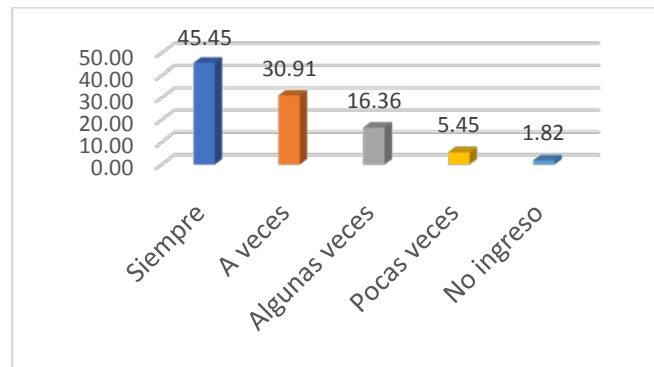


Figure 1. Do I have access to the virtual classroom through social networks to interact with class sessions?

25 students (45.45%) responded that they "always" have access to the virtual classroom through social networks, to interact with class sessions, while 17 (30.91%) answered that "sometimes" being the next, which shows that more than 75% of students have access to social networks and are able to interact with class sessions.

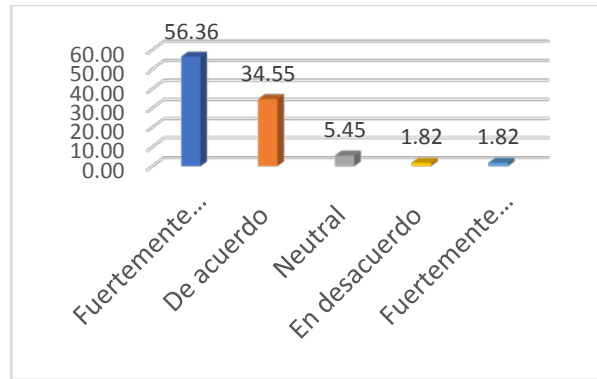


Figure 2. Is it easier for me to produce monographs when the teacher relies on audiovisual resources such as the virtual classroom?

In response to the question "Is it easier for me to produce monographs when the teacher relies on audiovisual resources such as the virtual classroom", 31 students (56.36%) answered that they are "strongly agree", the most frequent response, while 19 of them (34.55%) responded that they "agree" with the one that follows, making almost 80% of students who are facilitated to produce monographs with the virtual support of the teacher.

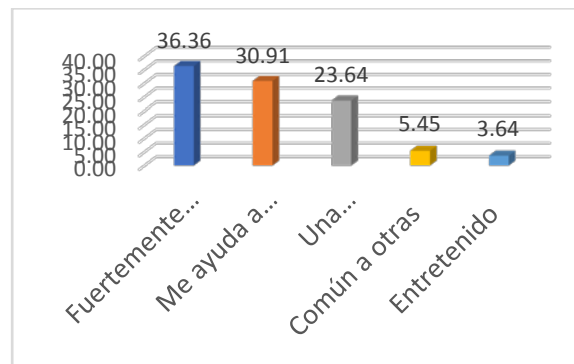


Figure 3. How do you consider this flipped classroom project?

In response to the question "How do you consider this flipped classroom project?", 20 students (36.36%) answered that they consider this method "strongly didactic", 17 students (30.91%) think that this method "helps me to learn more" and 13 students (23.64%) consider that it is "one more activity", which makes a total of 90.91% of students who support this methodology.

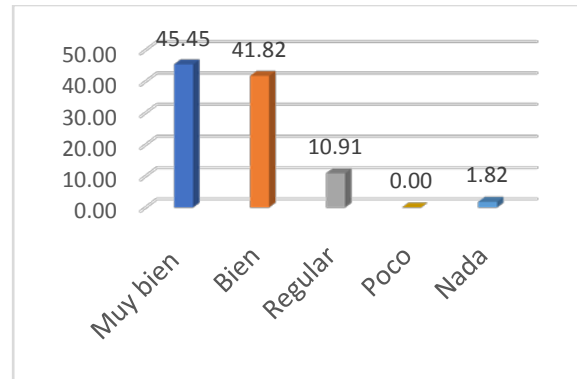


Figure 4. Has the use and management of the flipped classrooms allowed you to improve your attendance?

To the question "Has the use and management of the flipped classrooms allowed you to improve your attendance?", 26 students (45.45%) answered that they did "very well" in improving their attendance, while 23 of them (41.82%) responded that they did "well", with which it is obtained that in general rules 87.27% improved their attendance in a notable way, and those of the option of little or nothing are 1.82%, which is a reduced percentage.

IV. DISCUSSION

The general acceptance of students to use this flipped classroom methodology as support for academic activities could be verified by facilitating participation and effectiveness in communication and interaction among the actors of the educational process; that is, it can be affirmed that student-student and student-teacher communication improved in an effective manner in most cases. In addition, the student becomes the protagonist of his/her own active learning and acquires responsibility for the creation of his/her own contents and study materials. This concept also involves collaborative teamwork as a tool for acquiring knowledge and improving attendance at academic work. Thus, the teachers used social networks through the intensive practice of didactic activities. This is corroborated by the findings of DeLozier and Rhodes (2017), who concluded that in the inverted classroom model, teachers can adapt a variety of online tools to carry out online knowledge-sharing didactic activities. In short, in terms of experience, it can be said that the flipped classroom model worked because it relied on online videos and materials that allow students to access content as many times as necessary, which was very useful and improved students' attendance satisfactorily. This is corroborated by Nouri's research (2016), who concluded his research by pointing out that "the students in the study sample generally appreciated the inverted classroom. The most commonly valued reasons for this were that students appreciated learning through the use of video material, the opportunity to study at their own pace, the flexibility and mobility generated by accessible video conferencing, and that learning is easier and more effective within the framework of the inverted classroom.

V. CONCLUSION

It was possible to highlight six characteristics that define the experience of teachers in the use of social networks as educational environments: immediacy or instantaneousness, collaboration and cooperation, accessibility, availability, familiarity and communicability. This is corroborated by Ramírez (2016), who concluded that an atmosphere of cordiality, cooperation, companionship and belonging could be observed between the classes among

the young people since they constantly supported each other to carry out the tasks and works that were requested of them inside the classroom and outside on the Facebook group, always having the disposition to do it in the best way. On the other hand, even though the videos became fundamental in the classroom, it is advisable to be careful in their length and quality. The videos, like all didactic resources, are a means and not an end in themselves, so each of them must have a perfectly defined learning objective, as well as being made taking into consideration the principles of multimedia learning. Finally it is concluded that students may have the opportunity to acquire factual knowledge before the class phase. Short educational videos and access to existing instructional material in terms of Open Educational Resources are useful as long as they correspond to the respective learning objectives of the specific course. However, the use of other non-digital material is equally possible. The thematic connection between the online review and the classroom review should be clarified; only then can students recognize and utilize the advantages of the flipped classroom method.

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