

University degrees adapted to new social frameworks

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Abstract- For years, many studies have been stressing the importance of incorporating new technologies and tele-education in universities across the globe. However, the implementation of new methodologies that take advantage of educational innovation supported by new technological tools has been slow and gradual. The new reality to which we have been exposed due to the health emergency caused by COVID-19 has hastened the incorporation of these methodologies hastily and has highlighted the lack of resources or training that universities suffer from to face the changes that have occurred. There is a clear need to modernize educational methodologies in higher education to bring it closer to the new generations and their needs, implementing more flexible models that provide transversal competencies. This work proposes a methodology based on social networks as a tool for support and connection between teachers and students. In addition, we explored different combinations of accessible software that allowing us to conclude the steps to follow for the successful implementation of social networks in the classroom.

Keywords: *higher education, social networks, distance learning.*

1. INTRODUCTION

Great efforts have been made in recent years to incorporate new technologies into university teaching. There is much research, in which learning methodologies are studied, related to the use of technologies such as e-learning, b-learning, or machine learning. However, these works may become obsolete in a short time due to the speed with which new technologies transform.

Despite all the knowledge that exists on the subject, the change from classical education to the technological world has not been reflected in the classroom. It is true that, in the field of higher education, both in traditional, face-to-face universities and in institutions offering distance learning, changes are taking place perhaps more rapidly than at other levels of education (Prendes & Castañeda, 2004). Elements such as tele-teaching platforms have been incorporated and in certain centres, some projects aim to advance in the use of technological tools inside and outside the classroom. However, there is still a long way to go, and the transition has so far been slow. As a result of the health emergency, which we have been experiencing since the beginning of 2020 concerning Covid-19, teachers have been forced to teach classes telematically and even to carry out an assessment in the same way, adopting programs that were initially structured to be taught traditionally in the classroom. This has shown the need for resources and training to ensure the

adaptation of education to new methodologies characterized by greater flexibility.

Among the new tools that can be found, social networks stand out for their great potential to open up a friendlier and direct channel of communication between students and teachers. The use of social networks can not only improve students' learning, but also the teacher's expectations (Prada-Núñez, et. al., 2020).

Due to their influence on people's lives and their rapid expansion, social networks have been analyzed and researched from different fields such as politics, economics, business, culture, behaviour... But it is only a few years ago that it is being studied in the field of education. This is because initially, it was difficult to relate the habitual use of social networks and learning, but their widespread use among the younger generations and their great commands of all these new networks means that they can become allies for collaborative learning, the exchange of information and the promotion of cooperation (Alcívar, 2020).

For young students, social networks have become their main means of communication. According to studies by De la Iglesia, et. al. (2020), the majority of students go online daily (99.5%) and report high use of social networks (98.8%). This fact can be used to promote a new learning model.

According to Vidal, Vialart, and Hernández (2013), social networks seek dynamic exchange between people, groups, and institutions that live together or move in similar contexts. It is an open system in constant construction, in which to create, share and collaborate.

2. CONTEXT

When outlining a teaching methodology, we must bear in mind that it can be designed according to its degree of presence and synchronicity. As we can see in Figure 1, we can move between fully face-to-face and synchronous classes (traditional classes), and distance classes, in synchronous or asynchronous mode.

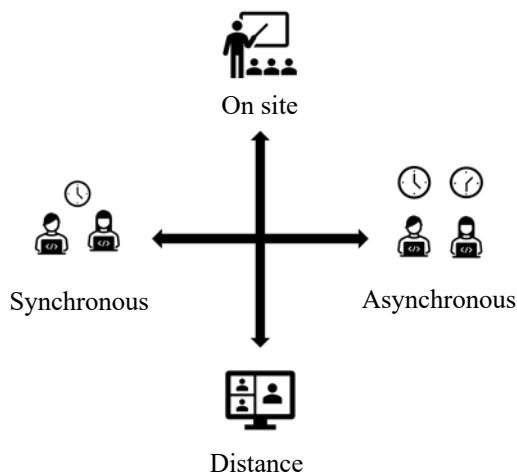


Figure 1: Factors influencing the mode of education

We obtain greater flexibility to take these four factors in our planning because it allows us to include different education modalities within our programming.

There is no doubt that face-to-face teaching has certain advantages over distance learning, whether synchronous or asynchronous. Communication is more effective when teaching face-to-face. Not only our voice is involved, but also our gestures, intonation, eye contact... without forgetting that, as we can see our students, their gestures, their attitude, etc., we have clues that help us perceive their interest and attention. Therefore, when we teach in front of the camera we must highlight all the characteristics that make our communication effective, emphasize our intonation, our posture, our gestures, adapting them to the camera and its frame. This communication, in turn, must be bilateral and the students must have the equipment that allows them to participate in the explanation.

The main advantage we have when using distance learning allows us to teach the class without the need to be in the location as the students. But if we opt for the asynchronous modality will provide the opportunity to adapt the timetable and also allows students to have the content at their disposal at any time.

The aim is to make education more flexible and give higher education students greater independence, involving them in their learning process with methodologies that will explain later on.

Until now, Spanish universities have generally offered two types of education: face-to-face and distance learning. Most Spanish universities offered face-to-face classes, leaving distance learning to specific centres such as UNED, UDIMA, UNIR, etc. With the improvement of epidemiological data in the 2020/2021 academic year, traditionally face-to-face universities have been alternating with blended learning models, with different nuances in each centre or each situation. But in most cases, this modality involved traditional recorded classes and face-to-face exams.

When we talk about digitizing teaching, it is not using the same traditional methodologies through electronic devices. Educational programs must be rethought from their inception to their evaluation in a way that provides flexibility and allows them to adapt to uncertain situations.

Several studies point out that there are many reasons why the introduction of new technologies is not taking place at the desired pace. We could highlight among them: lack of knowledge and inadequate training, attitudes of rejection towards their introduction in teaching, logistical obstacles (knowledge of the material available, suitability of the materials for the class, etc.), economic limitations, extra effort and time that teachers have to invest in preparing educational practice when using these resources (Rodríguez, 2010).

To avoid this, first, it is needed to prepare teachers in technical skills and distance pedagogy. Because no matter how well they handle a particular software or computer program, they must know how this system is capable of improving the student's experience, providing resources that are useful for both teachers and students.

Once teachers are familiar with distance pedagogy, the use of social networks circumvents many of the drawbacks mentioned above, as their use is free of charge and widespread throughout society to a greater or lesser extent. Currently, the majority of the population is capable of creating content on the networks and it is this knowledge that we want to take advantage of in the educational field.

The model we propose for flexible and accessible education is a mixed model that takes advantage of the great benefits of traditional teaching with the advantages of distance learning and the use of technologies, in particular the use of social networks in university education.

It is a question of taking advantage of the resources we have at our disposal to solve existing problems and unifying both systems, face-to-face and distance learning, in this mixed system, which allows us to adapt and at the same time provides us with the advantages of each one of them, making up for the weaknesses of the other.

3. CONTEXT

With proper guidance and planning, social networks can become a tool that enables collaborative learning and involves information exchange spaces to foster cooperation, research, and the development of skills such as analysis, reasoning, synthesis, critical capacity, decision-making, among others, so that students can generate their knowledge (Islas and Carranza, 2011). Incorporating social networks in the learning process favours the publication of information, autonomous learning, teamwork, communication, feedback, access to other related networks, and contact with other experts, among other elements. All this, while at the same time there is the direct interaction between student-teacher and student-student; which facilitates constructivist learning and collaborative learning (Valenzuela, 2013).

By introducing social networks in university education, the acquisition of the transversal competencies shown in Figure 2 can be enhanced.



Figure 2: Competences acquired through the use of social media in education.

The tools currently used in universities, such as Moodle, are very useful tools that allow us to carry out many of the tasks required to implement a blended model. Figure 3 shows the functionalities provided by this tool.

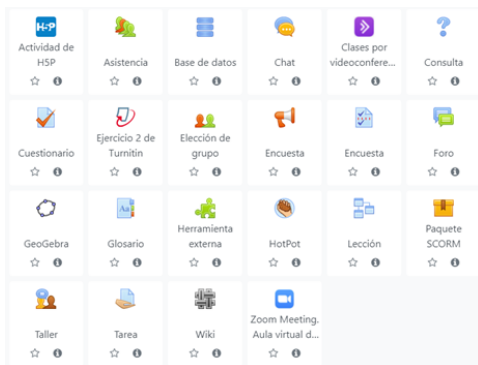


Figura 3: Herramientas que ofrece la plataforma de tele-enseñanza Moodle

In addition to these functionalities, the platform allows us to upload files, make folders and organize content by subject. It is a fairly complete tool, however; it does not provide all the functionalities that may be considered necessary and is an unknown environment for students who are more familiar with other digital platforms.

The main digital tools that have been selected for possible application in education are described below:

1. Video calling tools. They have been one of the most widely used resources during the pandemic. They allow a direct and synchronous communication channel to be established between teachers and students, enabling distance classes to be taught in real-time.

- Zoom. This is a videoconferencing service in the cloud. It is free to use, does not need to be downloaded, and allows sessions to be recorded.

- Microsoft Teams. This is the centre of teamwork in Microsoft 365. It allows instant messaging, audio and video calls, and online meetings.

- Skype. Allows individual and group video and voice calls, instant messaging, and file sharing.

- Blackboard Collaborate. It is a real-time video conferencing tool that allows you to add files, share applications, and use a virtual whiteboard to interact.

2. Social networking. Allow you to create a virtual meeting point where students are used to interacting. Traditionally, these networks are conceived as platforms on which to establish social relationships, but increasingly work and research groups are being incorporated within these areas. There are different social networks with their special characteristics, so the type of

activity to be carried out must be adapted depending on the social network used.

- Facebook. This is a web 2.0 platform on which a workgroup can be created to share material, generate debates and even upload videos with didactic content or make live broadcasts. It allows us to monitor students' activity with the subject in an environment that is familiar to them.

- Twitter. This is an ideal environment in which to generate debates and share information. It allows us to generate threads with the different topics dealt with in class in which students can express their opinions or doubts in a brief and summarized way. Advantage integrated social networks, a disadvantage from the point of view of the teacher and the student.

- Tiktok. It is one of the social networks that has grown the most in the last year. It allows the uploading of short videos (3 minutes).

- YouTube. This is the most widely used video platform. It allows us to upload videos of any length, which provides us with a platform on which to upload asynchronous teaching material. It also incorporates the option to activate subtitles, which could help learners with specific hearing needs.

To evaluate the possible application of social networks in our university, we have carried out the programming of the subject of Geology, incorporating the use of social networks in the different activities carried out in this subject. To subsequently evaluate the advantages observed.

The main activities currently carried out in the subject are described below:

1. Theoretical-practical classes
2. Laboratory and field sessions and evaluation.
3. Self-assessment with Moodle theoretical-practical questionnaires.
4. Lecture and laboratory preparation and review

4. RESULTS

To analyze the benefits or disadvantages of social networks concerning the current methodology used at our university, a comparison will be made between the Moodle platform, which is currently used in the Geology course, and the different social networks studied in this work. Table 1 shows the comparison drawn up for the different activities described in the previous section, marking whether it is possible to carry out this activity with any of the tools available to us.

Table 1
Functions offered by the digital tools studied

	Activity			
	1	2	3	4
Moodle	✗	✓	✓	✓
Facebook	✓	✓	✗	✓
Twitter	✗	✗	✗	✓
TikTok	✗	✗	✗	✓
YouTube	✓	✓	✗	✓

As we can see in the table above, Moodle covers the majority of the activities proposed. Now we are going to study if there are any advantages

1. Theoretical and practical classes. The Moodle platform does not allow distance classes, whereas synchronous classes (Facebook Live) can be carried out through Facebook. Another option is to upload recorded sessions to YouTube, which will allow students to access the content at any time.

2. Laboratory and field sessions and evaluation. The laboratory and field sessions must be given in person. As we have already explained, the aim is not to eliminate face-to-face sessions, but rather to combine both modalities. However, the assessment, which up to now is assessed employing the students' preparation of a handwritten notebook, in which images must be attached, can be replaced, as can be seen in table 1, by all the tools studied except Twitter, as the number of characters is limited, and TikTok, as the length of its videos is insufficient for this task. In the case of Moodle, the only difference with current practice is that this notebook could be produced in digital format and uploaded to the platform. The advantage of Facebook is that it is possible to create a publication for each laboratory practice or field trip, attaching photographs and creating a summary of the activity carried out. On YouTube, an explanatory video could be created with images and video fragments of the laboratory itself.

3. Self-assessment with Moodle theoretical-practical questionnaires. Social networks do not present any advantage in this activity compared to Moodle.

4. Preparation and review of lectures and laboratory. Any of the available tools could be incorporated in this activity, as it depends on the content that both the teacher and the students have generated in the networks. If only the Moodle tool is available, the students can only use the syllabus that the teacher makes available in the tool. However, with the use of social networks, students will have access to all the content uploaded by both the teacher and the students themselves to review and reinforce the knowledge acquired. One of the greatest advantages of using social networks is that, as the students have developed their material, a higher level of consolidation of knowledge is achieved.

5. CONCLUSIONS

The traditional teaching system lacks mechanisms to achieve the stimulation of the new generations. The youngest students belong to a generation that has grown up surrounded by new technologies, accustomed to the use of the internet and social networks from an early age, they do not find an environment in which they feel comfortable, within traditional classrooms in which in many cases resources such as textbooks or paper notes are still used.

Therefore, a change must be made to adapt to the digital age and synchronize again with our students. The use of social networks in education is a key factor in achieving this, and to develop this idea within our subjects we must study the possibilities that these networks offer us and select the functions that adapt to our syllabus and subjects. It is a job that requires time and effort but which will allow us to reach our students, arouse their interest, and increase their participation in the activities. By way of illustration, we have adapted the subject of Geology by introducing social networks in the activities

included in the teaching plan for the subject. The proposal is as follows:

Theoretical-practical sessions in the classroom combined with theoretical content on YouTube, thus making the material available to students at any time, facilitating their study and review.

For each laboratory or field session, students will prepare a post on Facebook with images and a summary of the activity carried out.

For each topic, students will carry out a questionnaire in Moodle and a video summary in TikTok of the main ideas of the topic for continuous assessment.

The complementary material of the subject that is usually found on the Moodle platform will also be uploaded to the workgroup created on Facebook.

A debate will be proposed for each block of the subject on Twitter.

All these activities will be evaluated by the teachers, taking into account the degree of participation of each student, as well as the quality of the content created by the students.

By incorporating these activities through social networks, we allow students to share their knowledge with other students in more dynamic environments. If we achieve greater motivation in their learning, we will improve their performance by obtaining better academic results.

Social networks allow an optimal adaptation to the different materials or to the different courses in which they can be used (López-Belmonte, et al. 2020), but their functioning must be well known to take advantage of all the benefits they provide.

Therefore, it can be concluded that changing traditional teaching styles in the era of Web 2.0 technologies will provide great benefits within higher education.

REFERENCES

- Alcívar, A. M. A. (2020). Usos educativos de las principales redes sociales: el estudiante que aprende mientras navega. *Revista Científica ECOCIENCIA*, 7, 1-14.
- Argüelles, R. V. (2013). Las redes sociales y su aplicación en la educación. *Revista digital universitaria*.
- De la Iglesia, J. C. F., Otero, L. C., Morante, M. C. F., & Cebreiro, B. (2020). Actitudes y uso de Internet y redes sociales en estudiantes universitarios/as de Galicia: implicaciones personales y sociales. *Revista Prisma Social*, (28), 145-160.
- Islas Torres, C., & Carranza Alcántar, M.R. (2011). Uso de las redes sociales como estrategias de aprendizaje. ¿Transformación educativa? *Apertura*, 3(2),
- López-Belmonte, J., Pozo-Sánchez, S., & Fuentes-Cabrera, A. (2020). La realidad de la aplicación de redes sociales en el entorno educativo. El caso de una cooperativa de enseñanza de Ceuta. *Revista Electrónica Educare*, 24(1), 326-347.
- Prada-Núñez, R., Hernández-Suárez, C., & Maldonado-Estévez, E. (2020). Diagnóstico del potencial de las redes sociales como recurso didáctico en el proceso de

- enseñanza en época de aislamiento social. *Revista Espacios*, 41(42), 260-268.
- Prendes, M., & Castañeda, L. (2004). Análisis de materiales didácticos en un modelo de Telenseñanza.
- Rodríguez Cifuentes, M. (2010). Profesorado y Telenseñanza: La experiencia de formación del profesorado en torno al proyecto SUMA de la Universidad de Murcia.
- Sánchez Carracedo, F., López Álvarez, D., Llorens Largo, F., Badía Contelles, J. M., & Marco Galindo, M. J. (2020). La universidad que viene: de la 'docencia remota de emergencia a la 'presencialidad adaptada'.
- Valenzuela, R. (2013). Las redes sociales y su aplicación en la educación. *Revista digital universitaria*, 14(4)
- Vidal, M., Vialart, M. N., & Hernández, L. (2013). Redes sociales. *Educación Médica Superior*, 27(1).