

GROUP INFOGRAPHICS, PREPARATION, PRESENTATION AND DEBATE. COLLABORATIVE WORK IN THE UNIVERSITY CLASSROOM

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Abstract

This work presents the methodology and analyses the results of the experience of the use of infographics within the university environment, in the project "Infographics applied to university teaching", supported by the Institute of Educational Sciences -ICE- of the Universitat Politècnica de València -UPV-.

We analyse the results obtained after the presentation of the infographics, the reflections obtained by the students, the conclusions drawn after analyzing the group work and their evaluation through rubrics. We also analyze the free infographic platforms most used by students and the progress they have made in self-learning, peer interaction and student self-regulation.

The students have elaborated individual and shared group infographics throughout two courses within the project framework. The shared group infographics have focused on research that is proposed towards active and cooperative learning and seeks student self-regulation. In this work we will analyse the results obtained in the subject "Introduction to the Conservation and Restoration of Gilding and Polychromies" of the Degree in Conservation and Restoration of Cultural Heritage UPV.

The methodology of group infographics consists of assigning research topics to groups of four or five students. They select the contents and represent them through online infographics, using free platforms that allow collaborative work. After that, the groups of students present the infographics in the classroom, explaining their conclusions and assessing the impact on their learning, answering some questions posed by the teacher and holding a peer discussion.

Final conclusions will help us to improve the use of this learning tool and to better assess the students depending on the online platform used.

Keywords: infographics; university classroom; collaborative work; debate; ICT.

1 INTRODUCTION

In this text we analyse the use of infographics as a teaching tool, within the university context, and in this case within the field of conservation and restoration.

The main objective of the project is to propose the use of ICT, specifically infographics, for the development of a joint teaching strategy, through the use of multiple forms of representation, valuing the tools to stimulate content in a diversified way, in which the synthesis and abstraction of complex contents are the main purpose. With this, it is proposed to promote dynamism and encourage creativity in the visual representation of student content, promoting the coexistence of multiple forms of representation.

This educational innovation focuses on students developing individual and shared group infographics throughout academic course. In this article we will focus on shared group infographics, which have allowed students to develop a visual and synthesised methodology, at the same time being an evaluation tool for the teachers involved in the project.

The teaching experience is part of the subject "Introduction to the conservation and Restoration of Gilding and Polychrome" of the Degree in Conservation and Restoration of Cultural Assets. It is part of the project "Infographics Applied to University Teaching", supported by the Institute of Educational Sciences -ICE- of the Universitat Politècnica de València -UPV-. The project is made up of professors from the Business Organization Department, Drawing Department, Painting Department and Department of Conservation and Restoration of Cultural Heritage.

In this subject, a series of complex topics are exposed, which sometimes are not assimilated by the students, thus the depth of learning decreases. By introducing the specific infographics for each topic, they are being invited to reflect on what the various structures are, analysing where the basic and adjacent ideas are.

The visual representation of the contents always outlines and establishes a conceptual hierarchy, favoring in depth learning. Dansereau [1], in 1989, already stated that the representations elaborated by the students, and in the analysis reproduced by Arenas which emphasizes that they diagnose the student's cognitive structure, facilitate the development of their vocabulary, improve the group discussion of a content or domain, favor the learning of texts, facilitate the integration of the information obtained, improve schematization and help to represent problems [2].

2 METHODOLOGY

In the present study, a group research is proposed in which peer learning is favoured and the key skills of teamwork and leadership are developed [3].

2.1 Planning of the activity

2.1.1 Assignment of the research topic by groups

The teaching staff forms the work groups, a topic is assigned to each of the teams and a scheduled time is proposed for its achievement. They are invited to carry out a complex investigation, exposing them to the most representative research databases for the search of bibliography and specific articles. They were provided with a list of institutional and public repositories, emphasizing that for research to be rigorous, a good selection of sources is necessary. It is important to note that if the investigation does not give adequate results, the infographic will not be able to collect solid results and conclusions, with this we ensure that an exhaustive search will be carried out.

In our case, an activity related to the “corlas” was proposed. “Corlas” are stains of various shades that are applied to silver to give it the appearance of gold, or to give it a specific shade, without removing the shine from the surface [4]. The materials on which they had to carry out the research were resins and dyes of natural origin. At the same time, we carried out practices with the resins in class so that they could understand their composition and color, as well as hardness and solubility, so that they could identify the different materials (FIG.1).



Figure 1. Practice with the “corla”, object of study. Source: Infographics project.

2.1.2. Description of the available infographic programs

At the beginning of the course, a list of the main programs that could be used was provided, including Piktochart® [5], Canva® [6], Visually [7] or Genially [8], among others.

All of them are intuitive and do not present great complexity, in addition to adapting to various visual models, making it easier to accommodate different approaches in a flexible way, developing the DIY - Do It Yourself- teaching tool. This strategy is a motivating element, which empowers the user because they have greater control [9].

The programs that were recommended to them were free. Students are always exposed to the possibilities of free programs that are available for their use, from their basic manual exercise to the use of more complex programs, prioritizing their free nature, to allow for equal access to technological tools.

2.2 Development of the activity

During the assigned time, time was left in class to solve any doubts and the progress of the activity was monitored.

2.2.1 Group work: infographics

For the infographics, the students had to select the times and work equally. The work did not occupy class time, but was autonomous. Each group freely distributed tasks and times. There was no scheme or script to carry out the research, but the students selected what information was most important, prioritizing content, with its consequent design in the infographic.

2.2.2 Group presentation

A class session was assigned for all the infographics, recording the session to be able to process the information later. In the group presentation, all the students had to present, inviting them later to a reflection and debate with all the conclusions obtained (FIG.2, FIG.3, FIG.4.)

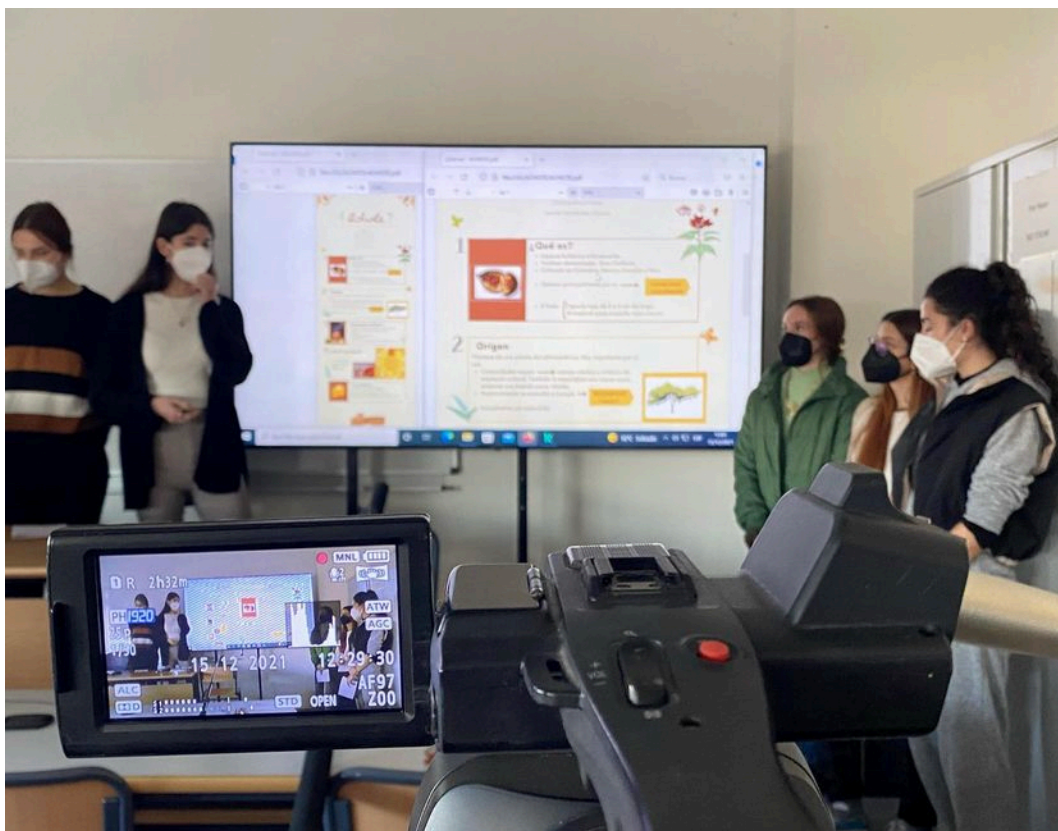


Figure 2. Exhibition of group infographics. Source: Infographics project.



Figure 3. Exhibition of group infographics. Source: Infographics project.

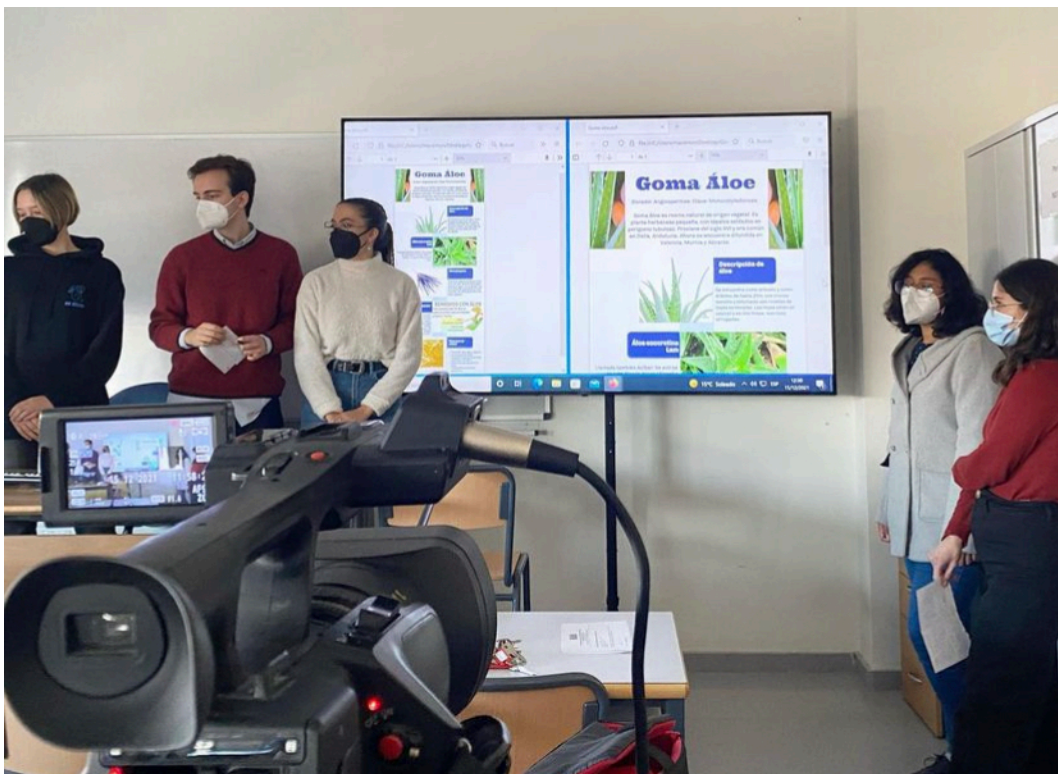


Figure 4. Exhibition of group infographics. Source: Infographics project.

The evaluation was carried out by rubric, for the infographic works and observation for the presentations and debate, paying special attention to the interaction between the students.

3 RESULTS

The infographics are the subject of a presentation and subsequent debate, in which opinions and observations are exchanged, promoting peer learning. In this educational innovation, the infographics of the students, give rise to a subsequent debate.

After analysing the results and an individualized review, with its arguments and possible reflections, we have been able to analyse the level of synthesis and depth of understanding of each the student's subjects. Subsequently, the debate that is generated in the classroom within some dynamics is integrative, verifying, "the pedagogical functions that the material can play and the tasks or cognitive demands that the student has to put into play to process the content of the material" [10].

For the analysis of the results we are going to use three parameters: the result of the infographics, as evidence for the evaluation, the result of the anonymous surveys aimed at understanding the impact of the practice and the results obtained from the subsequent focus group.

3.1 Results of the infographics and the group discussion

The infographics made by the students were diverse (FIG.5, FIG.6), the results were enriching for the classroom as a whole, since their presentation through the Teams® platform facilitated contact between the results obtained by the various groups, favouring cooperative learning, which, according to March and Fernández, there is a broad consensus in defining it as a "set of methods in which students work together in small groups and help each other to achieve learning objectives" [11].

It fundamentally highlights the heterogeneity and diversity of conceptual representations and methodologies developed, validated by groups and debated in the virtual classroom.

The students value that the applications are intuitive, easy to understand, that they guide you during the process, that the designs are adaptable, that you can work online with several devices at the same time, that the interface is comfortable and that it does not involve any economic cost.



Figures 5,6. Examples of group infographics. Source: Infographics project.

3.2 Anonymous survey results

Anonymous surveys have been carried out on the SurveyMonkey® platform, for all the subjects of the project [12].

In general terms, in the global survey, in both courses, around 96% of the students evaluated the use of infographics as a teaching tool as useful. 96.55% state that they have helped them analyse in detail and synthesize content.

62.07% believe that shared group infographics have promoted teamwork, developing cooperative methodologies. 82.76% value that making the infographics of the subjects does not suppose an overload of work. After the experience, 75.86% of the students surveyed believe that they will continue to make infographics in other contexts. Regarding the voluntary selection of the program to use, the assessment of the students is that 81.48% find it useful to choose the tools to use (FIG.7), while 14.81% find it indifferent, compared to 3.70% who do not consider it useful.

¿Te resulta útil utilizar el programa que tú mismo elijas?

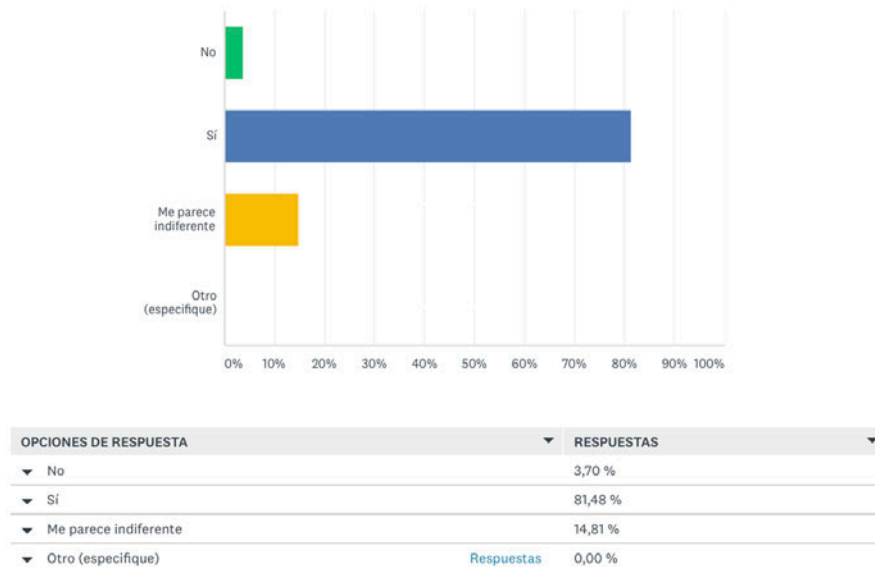


Figure 7. SurveyMonkey® survey results. Source: Infographics project.

3.3 Student Reflections during the focus group

- Regarding the methodology carried out for the shared group infographic work: The purpose of the study was to know how the work is distributed and how the tasks are distributed. The inquiry also intended to collect opinions regarding group exposure.
- The presentation of the group infographics; a percentage of the students feel it was an incentive, a stimulus, for the improvement of their exercises, there was also learning among peers.
- Regarding the selected programs; the use of Canva® Teams stands out, since it allows instant collaborative work, which in turn allows balanced work. That way students ensure that all members of the group are connected and working at the same time. It is important to note that the entire group presented the part worked on.
- The students affirm that more attention is paid when the students present an infographic instead of a power point, because it arouses interest and encourages comparisons with what the other groups have done, motivating the students to improve in the delivery of their presentations.
- The free assignment of tasks among the students was of great help, since they know each other from previous group projects and each one plays a role within the group, a role they have already internalized. They insist that the groups have to made on a voluntary basis, since they may have already carried out previous group work together and have their own dynamics, whereas if they are assigned a new partner, the adaptation is tougher, and they consider that time is wasted .
- The students consider that infographic language is universal. It's something very current "because today you start looking at stuff and you immediately get tired of what you're seeing, so it's a way of learning, something that today we're used to seeing on social networks."

4 CONCLUSIONS

One of the key issues is the heterogeneity in the presentation, there being no infographic similar to each other. This shows the value in the diversity of the student body, since it generates diverse languages, focusing on what has been most remarkable in the speech, analysing the content and representing it creatively.

Within the typologies of static/dynamic infographics, it has been observed that the theory tends to be represented statically in 100% of the cases. In practice, around 80% of the students have generated images (.jpg, .png) while 20% have made repetitive videos in GIF format.

For the selection of the program used, the students valued qualities like the ease of being able to upload images, the types of fonts available, the formats in which their work can be downloaded, if these formats are seen clearly, in order to be able to present themselves adequately.

The students have considered that the exercise was interesting to do because the information is seen in a very graphic and visual way and can be understood in a single glance. They recognize that it is a good format to generate brochures because it is very graphic and very easy to understand and at the same time it has the same visual format as phones, so the information can move quickly. They value that it is very didactic and that it could be very useful for different institutions, such as museums.

The teaching methodology that is presented is surely transferable to any university discipline in other centers or institutions and with specific practices designed for it, for this reason special emphasis has been placed on the dissemination of the results of the experience in specialized media, for the teachers interested in implementing similar experiences later.

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