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PACKAGING DESIGN: LEARNING THROUGH FICTIONAL CASES OR REAL CASES? COMPARATIVE STUDY OF STUDENT PERFORMANCE OVER 8 ACADEMIC YEARS

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Abstract

In the practical subjects of the Degrees in Industrial Design students usually apply theoretical knowledge to solve complex cases, but in many occasions these cases are only fictional. However, it is also possible to provide students with cases that respond to real needs, and on many occasions, it is the companies that propose them through contests. Numerous experiences endorse the Competition-Based Learning (CBL) as a working methodology that improves the motivation of the students. But it is worth asking to what extent this motivation achieves a significant improvement in student performance.

This paper hypothesizes that the performance of industrial design students is higher when they work to solve real cases than when they have to solve fictional cases. To demonstrate it, the average grades obtained during 8 academic years in a subject related to packaging are compared. Between 2011 and 2014, students were presented with a fictional case in which it was necessary to solve a specific need for a new type of packaging. Between 2015 and 2018 a similar exercise was planned, but based on real cases proposed by companies in the sector. In both cases, the exercise was planned during the central weeks of the semester, the students were given a similar period of time to develop them (around 4 weeks), and they were evaluated according to similar criteria.

The results of this study show that the orientation of the exercises towards real cases through participation in contests seems to have a slight positive influence on student performance (+3.25%), so it is possible to demonstrate that the incorporation of CBL as a teaching methodology is generally positive for design students, given that it improves both their motivation and the quality of their proposals and has a positive impact on their performance.

Keywords: Industrial design, product presentation, competition-based learning, packaging.

1 INTRODUCTION

Currently, university Degrees in Industrial Design combine theoretical subjects with other subjects of a more practical nature. In practical subjects, students usually have to apply the theoretical knowledge they have learned to solve complex cases, but in many occasions these cases are only fictional and are prepared to be solved according to a certain level of difficulty, so it may happen that these fictional cases do not respond to real needs that students may find during the exercise of their profession. However, it is also possible to present students with cases that respond to real needs, and on many occasions it is the companies that propose them through contests.

Numerous experiences support the Competition-Based Learning (CBL) as a working methodology that entails numerous advantages, such as improved performance, motivation and student learning [1] [2] [3] in different areas of knowledge. But to what extent does this motivation achieve a significant improvement in student achievement?

This paper hypothesizes that the industrial design student's performance may be higher if he or she is encouraged to work to solve real cases, rather than fictional cases, and attempts to quantify the difference between the two performances to see if it is significant. To this end, the average grades obtained during 8 academic years in a subject related to packaging are compared: in the first 4 years the students worked on fictitious cases, and in the following 4 years they worked to solve real needs raised by companies through contests.

2 METHODOLOGY

In the subject taught between 2011 and 2014, students were presented with a fictional case in which it was necessary to solve a specific need for a new type of packaging. Between 2015 and 2018 a similar exercise was planned, but based on real cases proposed by companies in the sector. In both cases the exercise was planned during the central weeks of the semester, and gave them a similar period of time to develop them (about 4 weeks).

The exercises are described in more detail below.

2.1 Description of the exercises carried out during the years 2011-2014.

During these years the proposed exercise was always the same, and was evaluated on all occasions under the same criteria.

2.1.1 Description

To design a set of packages for marketing tea, the presentation of which would be original and clearly distinguish the product from the existing competition. The set will be composed of:

- Three primary packages that meet the following requirements: each package must contain a different type of tea, each must be generated from a single piece, must provide adequate protection for the product, must allow easy grip and handling for the user, must be modular and allow storage that compacts the space, and the three must have the same modular shape with a differentiated graphic design, but that allows them to be perceived as belonging to the same family.
- A secondary package that groups the 3 previous packages, with the following features: it must be generated from a single piece, it must provide adequate protection to the 3 primary packages, it must be modular and allow a storage that compacts the space, and the graphic design must show the brand and inform of the content.

The choice of materials to work is free, according to each case (paperboard, cardboard, plastic, etc.). The use of photo retouching and/or graphic design software is permitted.

2.1.2 Elements to work and deliver:

- Preliminary sketches and pre-models. As many paper sketches as necessary must be made until the shape of the primary and secondary packages are well defined. It is also necessary to prepare at least two three-dimensional test sketches (pre-models): one of the primary package and another of the secondary package, made of cardboard or a material similar to the one that will have the final design.
- Definitive packaging models. It is necessary to develop 4 models, print them on cardboard and assemble them:
 - Three primary packages. They must be modular and when they are put together they must compact the space. The three packages will have the same shape, but their graphic design will be different in order to distinguish three different types of tea (one family of products). In addition to showing a different name for each type of tea, the differentiation between the three packages through graphic design can be given by: a change in the colour of the package and/or in the typography, a change in the graphic texture, a change in the ornamental motifs used, or a combination of several of these solutions.
 - A secondary package, which will act as a grouper of the 3 primary packages. It must show the brand and inform of the contents. It may also include a barcode in a discreet place. The graphic design shall be in the same style as that used for the three primary packages.
- DIN A3 Panel: In the A3 panel, the 4 packages created must be adequately defended in such a way that it is clear what the proposal consists of. The panel should contain: adequate pictures of the primary and secondary packages, drawings or pictures showing the modular property of the secondary packages, images of the most interesting sketches or previous ideas, conceptual defence of the solution presented justifying which aspects have been followed for the design of the package: ergonomic (easy to handle), aesthetic (original shapes and proportions, suitable and attractive), functional (easy to open, close and assemble, and modular), marketing (minimise cost: do not add adhesives if not necessary), communicational (justify the graphic

design applied to the packages). The panel may also contain technical data (measures and development plans of the primary and secondary packages) and a mention of the materials used to create the packages.

2.1.3 *Evaluation*

- Packaging and models: 6 points (conceptual quality, technical and technological quality, originality, functionality, modularity and quality of the model).
- Panel: 2 points (layout, legibility, relevance of the contents and quality of the images).
- Development of the work: 2 points (follow up in class, packaging sketches, pre-models and panel sketches).

2.2 **Description of the exercises carried out during the years 2015-2018.**

The exercises consisted of designing a new type of packaging that would respond to the real needs of prestigious companies. These needs were raised annually through the National Packaging Design and Sustainability Awards, promoted by the Packaging Cluster (Valencia, Spain). The approach varied according to the needs of each company, but in all cases there were common requirements and the same assessment system. Each participating company awarded each year a first prize (1000 €) and a runner-up prize.

2.2.1 *Description*

Make a single packaging design that corresponds to one of the needs or themes defined by the participating companies. This design must take special account of the novelty and sustainability of the product presented.

The proposed package must include some of the following aspects in its design: ability to convey the brand and notoriety of the product, functionality during the logistical process and properties that ensure that the product arrives in good condition at the point of sale, easy handling and resistant to breakage, deterioration and other particular risks associated with its supply chain such as static electricity discharges, humidity, extreme environmental conditions, etc.

2.2.2 *Elements to work and deliver:*

- Informative dossier of the packaging design project (A4):
 - Background: general description of the product for which the packaging has been designed, its requirements, usual packaging system, etc.
 - Development: Description of the innovation it brings to the market and the main technical parameters: what type of product to contain; what its target customer is; how it responds to the identity of the brand; what graphics and colours it uses; what shape it has; whether it must be packaged with special requirements; whether it is incompatible with any material; how it preserves the environment, etc.
 - Description of the functional and formal package solution adopted: structural aspects of the design, technical aspects, properties of the materials proposed, possible manufacturing system chosen or manufacturing system applied, suitability for transport, estimate of the general budget, technical and commercial advantages, etc.
- Informative panel: presentation images of the package design. It will represent the renders, drawings, images and plans necessary, or any other element necessary for the proper presentation of the project. The graphic design of the package will be assessed.
- Full-size physical prototype.

2.2.3 *Evaluation*

- Package and model: 6 points (conceptual quality, technical and technological quality, innovation, sustainability, security in storage and distribution, quality of the model)
- Panel: 2 points (layout, legibility, relevance of the contents, quality of the images).
- Dossier: 2 points (must contain everything requested in the rules of the contest).

3 RESULTS

A comparison is made between the average grades obtained in courses 2010-11 to 2013-14 (exercises based on fictitious cases) and the grades obtained in courses 2014-15 to 2017-18 (exercises based on real cases, through contests). Figure 1 also incorporates the awards obtained by students in the last 4 years.

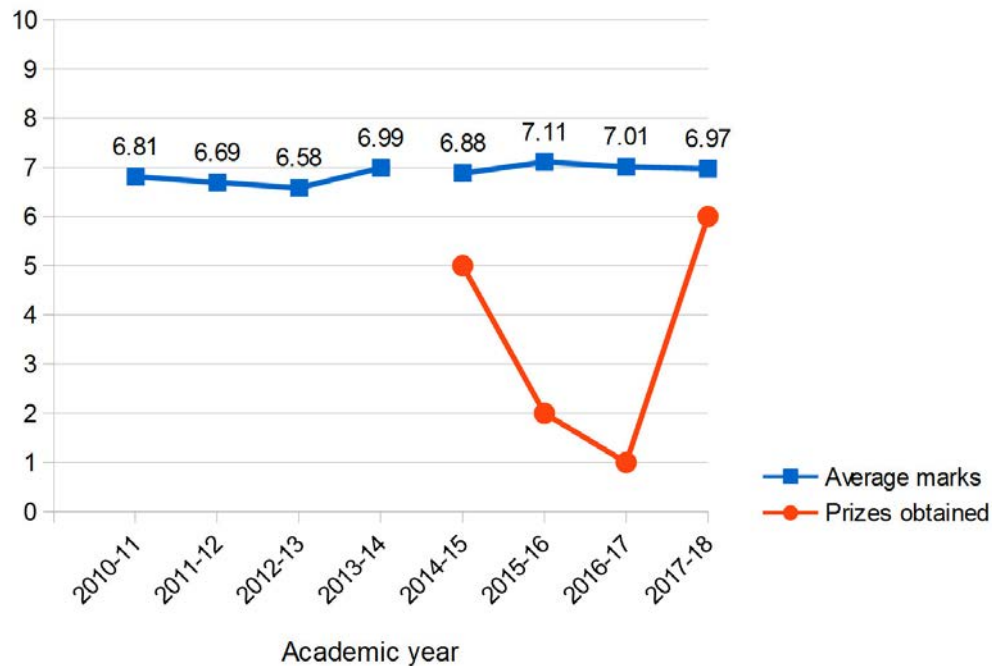


Figure 1. Average grades of the exercise in each of the courses (from 0 to 10 points) and number of prizes obtained.

4 DISCUSSION AND CONCLUSIONS

In order to establish a valid comparison between the two 4-years periods, similar exercises with a similar duration have been chosen, as already mentioned in section 2. Similarly, for this study, the teaching staff considered that the difficulty of the exercises of each period was similar, according to their experience.

Comparing the exercises, we see that the average grades of the courses 2010-11 to 2017-18 are maintained in similar values. However, if we compare the average grade obtained in the period 2010-2014 (6.77 points) with the average grade obtained in the period 2014-2018 (6.99 points) we note a slight improvement of 3.25%.

Thus, it is possible to affirm that the orientation of the exercises towards real cases through participation in contests seems to have a slight positive influence on the performance of the students. However, although the average score of the last four years in this exercise has improved appreciably with respect to the previous period, it cannot be demonstrated that there is a direct correlation between the average student performance and the number of prizes obtained each year. It can therefore be assumed that these are independent factors.

This study has been able to demonstrate that the incorporation of CBL as a teaching methodology is generally positive for design students, as it improves both their motivation and the quality of their proposals and has a positive impact on their grade. However, the scope of this study is limited to exercises related to packaging, so it would be necessary to apply this methodology in other subjects to measure its impact and draw broader conclusions about its usefulness.

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