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Design Education. University-industry collaboration, a case study

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Abstract: Design education often happens in hypothetical contexts indifferent to reality or the surrounding context, disregarding articulation between academy and industry and with no attention to approaches that might enable the academy and the business world to get closer and share knowledge and dynamics reflecting the cultural, technological and social realities of present day society. In the expectation of having design education better address the diverse competencies that will enable graduates to deal with future professional challenges in design, a partnership was established between the University Lusíada Norte and "A Portuguesas", a start-up dedicated to versatile "easy-going" footwear and with several sustainability concerns. The present case study was integrated in a 3rd year annual unit - Design III, of the BA in Design of the Faculty of Architecture and Arts of the University Lusíada Norte.

Keywords: Design education, curriculum, higher education-industry partnerships, pedagogy, systemic design.

1. Introduction

In the context of current society changes and of learning through real-world experiences, many issues could be discussed dealing with design education.

Donald Norman (2010) pointed out that "Designers often lack the requisite understanding. Design schools do not train students about [...] the interlocking complexities of human and social behaviour, about the behavioural sciences, technology, and business. There is little or no training in science, the scientific method, and experimental design."

Design education often happens in hypothetical contexts indifferent to reality or the surrounding context, disregarding any articulation between academy and industry and with no attention to marketing strategies, business models, technological advances or real target-customers' needs.

Although some authors, as Levy (1990), have argued for the separation of university and industry/the market, we believe that traditional institutional approaches, teacher- centered and overvaluing technique, overlook

- (1) end users and real market needs;
- (2) the richness of experimentation with innovating materials, techniques and technology;
- (3) relationships with client, company, business sector, or with product/service in the market.

In this context, it is fair to say that if higher education in design is to contribute to reflect upon technological, social, cultural, ecological and economic world realities, then education needs to grow from traditional models to new approaches. Approaches in which both the academy and the business world will be able to get closer and where both may share knowledge and dynamics reflecting the realities of present day society.

Thus, in this case study, university-industry collaboration, was based on a partnership between the Faculty of Architecture and Arts (FAA), University Lusíada Norte (ULN), and the start-up "AsPortuguesas", which also permitted to work with cork, a material of excellence to project in Design, for its sustainable and ecological character and identity value for our country. With this partnership, expectations were raised that design education may address the diverse competencies that will enable graduates to deal with the challenges and success of their future profession as designers in the changing world of the 21st century.

Our aim with the present research in: (i) to increase awareness of context of professional design and of processes and products of design in real context, by understanding the benefits and barriers of real briefings in academic environments; (ii) to understand how a Design Education curriculum, engaged with interdisciplinary design and with a systemic approach, can consider open projects and partnerships with industry; (iii) to reflect on practices and values capable of generating significant changes in both parties, thought a close relationship between academy and industry in teaching (Kaklauskas et al, 2017).

2. Design Education

Since the first industrial revolutions, as a result of society changes, the way we plan, see and think "Design" has been changing drastically, and faster and faster. These changes have affected the profession of designer, the ways of working on a design project, the materials used, the production processes, the market requirements, the consumers' needs and higher education in design itself.

Today, Design is no longer "dependent" on the industry as it was in its early days, but rather in the service of society and the multiple values to which industry seeks to respond by increasingly associating itself to the Design process.

The relationship between design and industry has thus become closer, more balanced but also more dependent on each other, favouring a linkage of new competencies associated with a systemic approach.

In this sense, higher education in design, especially through design thinking and co-design, increasingly seeks to reflect these changes in the present academic curriculum (in content, skills and methodology).

The relationship between academy and industry has been questioned since the beginnings of higher education in design. In the history of design education, several schools, such as Deutcher Werkbund, Bauhaus or Ulm, did so. However, in the 21xt century, design and the designer have much broader responsibilities and faster rhythms which go beyond the questions of style and process addressed before.

On this issue, Fábio Silveira (Megido, 2016, p.101-114) says that the revolution in design education may be about to happen. He argues that education is the basis of social development and the "master key to meeting human talent" and creativity, but that globally the school continues to be an old-fashioned, conservative and rigid social institution where "limiting truths" and repetitive processes are impinged. For him, the relationship between design and education becomes beneficial in a transdisciplinary discipline that benefits of this revolution by changing the focus of thought that has hitherto been based on an industrial model. But Silveira also tells us that the new model must contemplate the human being in all its existential complexity and plurality. To support his theory, the author refers Bauhaus as the first design school in history, and the company IDEO as a precursor of design thinking in education, examples of breaking barriers and approaching these concerns, always through the method and model of thought. The importance of a design education where industry experience is included has thus to be seen as a means of aggregating various areas of knowledge and of solving complex and systemic problems.

3. Design Thinking and Design Ladder

The United Kingdom has devoted much importance to design education, as the implication of design in the creative industries is highly represented in the UK's economic and strategic areas. Wrigley and Straker (2017, p. 374) mention the important contribution of the UK Design Council in 2010, where the innovative skills and competences required by companies / organizations are regarded as intrinsic to the design thinking programme itself: creativity, flexibility and adaptability, communication, management and leadership skills that can be deployed within teams and in the entire organisation. Innovation and design are therefore inseparable concepts and perfect agents that facilitate business growth.

The same authors also refer the Danish Design Ladder, developed by the Danish Design Centre in 2003, a four-step model used to measure the level of design activity in Danish businesses, based on their attitudes to design: 1. Non-Design; 2. Design as Style; 3. Design as Process; and 4. Design as Strategy - Figure 1.

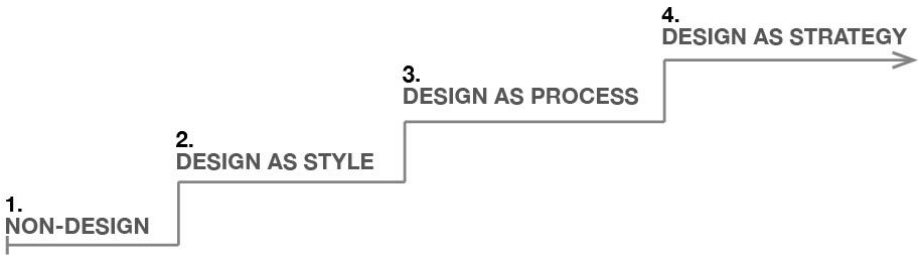

Figure 1. Danish Design Ladder (Kretzschmar, 2003) adapted from Wriglley and Straker p.376.

Design Thinking is a deep creative process that allows students and professionals to reflect and evaluate critically – theoretically, methodologically and practically – their own projects. This method of “doing design” in “thinking design” gives the possibility of change towards always better answers.

The concept was developed in the 1980s and its constant evolution is increasingly close to a business model where design is the main driver of the articulation between companies’ and consumers’ needs, society and world sustainability. We mean systemic design, with a clear focus on society and the human being.

However, this methodology cannot be successful for future designers in the labour market unless this understanding is already present in the curriculum of Design Education.

For all these reasons, the current curriculum of Design Education must be dynamic and reflect society, as well as its present real needs.

4. Design Education in Portugal

In Portugal, as explained by Almeida (2009, p. 59-60), Design education, making use of a more specific methodology and terminology, was initiated through art schools and teachers with no specialization in the area. Design was usually taught by artists and architects linked to the business and industrial sectors – they designed, they taught.

The importance of "doing and producing" was strongly felt in Portugal, often to the detriment of knowledge. Design education was essentially technical-professional training, "dominated by scientific and technical reason".

The evolution of this provisional model of higher education in design started in 1974 through the Schools of Fine Arts (in Lisbon and in OPorto). Recognized in 1983, the study plans were approved the following year. However, we had to wait nearly ten years (1992-1994) for Design courses leading to a first cycle degree to start in both Schools, bringing with them scientific concerns beyond the issues of consumerism or practice, which had previously dominated in Design education.

Today, Portugal has 38 schools of design in higher education, in both universities and polytechnic institutes, both public (26) and private (12), in the mainland and in Madeira. (PDB, 2018).

As pointed by the National Association of Designers (AND, 2018), founded in 2003, the curricula of the Design courses vary considerably and can comprise different specific areas such as Product Development, Branding, Fashion, Multimedia, Engineering and Product Design, Contemporary Culture, Materiality, Product, Clothing and Textile, Graphic, Sustainable in the Mediterranean World, Communication and New Media, Equipment, Interiors, Communication for Tourism and Culture... (Agapito et al, 2015 p.25-26).

5. Case Study

This case study was integrated in a 3rd year annual unit - Design III, of the BA in Design of FAA-ULN, in Oporto. This curricular unit (Design III) acts as a pivot point for the labour market and/or for the 2nd cycle of studies (Master's Degree).

The University Lusíada is a private university, with campuses in Lisbon, Oporto and Vila Nova de Famalicão. The FAA has the three cycles in Design education leading to the degrees of BA in design, MA in Product Design and PhD in Design.

The BA level in design started in 1989 as "Industrial Design". In the meantime, the designation changed to "Design" as the curriculum became more generic, now including three main areas which develop from the 1st to the 3rd year of the BA program: communication or graphic, equipment or industrial, and interiors or environment.

In this context, the 3rd year annual unit - Design III for the 2017/2018 academic year was planned in order to consider projects and partnerships open to industry, society and today's world, and aware of our cultural identities – including project proposals based on real briefs and international design contests, contacts with design offices and famous designers and also with the industry. Teachers, who both are professional designers, too, were particularly careful in their choice of partners for the projects, in order to avoid any unfair competition with professionals in the market. The project had

to contemplate values of ecology and sustainability. The program and syllabus of the curricular unit (Design III) was previously accepted, validated and promoted by the director of the FAA.

The partnership university-industry was established with “AsPortuguesas”, a start-up dedicated to versatile “easy-going" cork footwear. They have strong ecological concerns regarding sustainability. Cork is a 100% natural raw material – it comes from trees, the barks of which are stripped every 9 years to take the cork, leaving the trees themselves uncut. The start-up “AsPortuguesas” is an innovative project from Amorim Cork Ventures (Corticeira Amorim is the leading company in the cork industry).

The partnership was addressed to the product “flip-flops”. The differentiating aspect of their collections of cork flip-flops comes, in particular, from the innovation in the organic flip-flop sole, comfortable and with differentiated technical characteristics, joined by a palette of colours of serigraphic prints and to the flip-flops strips - Figure 2. “AsPortuguesas” are at an intermediate level corresponding to level 2, in the Design Ladder (Figure 1), with concerns mainly of style, appearance and ergonomics.

It is also relevant to mention the institutional context in which this project was developed – the experience with the flip-flops start-up "AsPortuguesas" analysed in this case study consolidated one of the four general objectives for the vertical design course structure of ULN, "building consciousness of the professional context" (ULN, 2018).

Figure 2. International flip-flops start-up "AsPortuguesas" (Credits: http://www.asportuguesas.shoes)

6. The problem: design education-partnerships

The main objective of this research was to reflect on the present curriculum of Design Education and on the importance, for undergraduate students in their final year, of building a stronger and closer understanding of the relationships between academy and industry. Based on the triangle higher education, industry and society (Figure 3), the following guiding questions were raised:

- 1. What are the advantages and disadvantages of real briefings, partnerships and collaborations with real clients and end-users during design education?

- 2. Considering the social responsibility of universities as institutions of higher education in design embedded in today´s society and taking into account present technological, cultural, social, economic and ecological development, what curriculum should we draw?

• 3. Can higher education in design, through the academy-industry collaborations, contribute to better prepare students for the real conditions of the workplace and at the same time make the workplace aware of the real importance of the practice-theory research developed in the academy?

Figure 3. Triangulation (university, company and society).

Some authors helped us to materialize our reflection on academy-industry relationships.

Almeida (2009, p.60-61) refers Ron Levy's Design Education: Time to Reflect, published in 1990, which promotes a strong separation / division between university and industry / market. He justifies this position with the argument that the relationship is very conditional and compromises the development of new competences, the priority of knowledge and the social responsibility of the academic institution. According to this author, the boundaries of the business world are rigidly defined whereas those of education should be as broad as possible. Therefore, the role of Design Education should focus on a dematerialization based on the components that determine artistic and scientific knowledge in matters of design, in addition to all the others that surround it.

Almeida (ibidem) however comments that today, as a result of several factors such as the competition from external research centres directly linked to companies, a different position from Levy's is required allowing the relationship academy-industry to exist.

Zeegen (2009, p.48) argues that the separation between academy and industry creates ruptures that are difficult to overcome. The author stresses the importance of a close relationship between industry and education, not only in terms of students' growth, but also as a tool for integration, rejuvenation and research and for reinvigorating the nature of business. In this context, a healthy relationship between both can introduce new reflexive practices and differentiating values capable of generating significant changes on both sides.

Falcão and Almendra (2017, p.S1405) refer that "Students should be enrolled in tasks with a high degree of complexity. Led to analyse data, understand the environment, discover problems and opportunities. There should be no briefing but an open call for action in a certain area or context." In practice, we are speaking of design in a systemic approach that, through its link to a "human-centred systems-oriented design practice" (Nelson and Stolterman, 2012), remains a challenge both for the business and the academic worlds.

In conclusion, it became crucial for us to focus and to reflect on the current curriculum model for design education and on the relationship between academy and industry, confronting the short history of teaching design in higher education in Portugal, which began less than five decades ago.

7. Methods

The present case study was an academic design brief based on a Problem-Based Learning (PBL) methodology, generating autonomy and enabling undergraduates to learn multiple competences, not only individually but also through classroom moments of group debate. In ULN-FAA this type of brief is not new, but it is still not common.

The methodology involved:

• articulation of the ULN-FAA with the start-up “AsPortuguesas”, through the two unit professors and the course director;

• students’ visits and meetings with the partners at Amorim Cork Ventures, Corticeira Amorim and Kyaia Group – Figure 4;

• continuous contact with the CEO from “AsPortuguesas”, at Amorim’s, and at the University in classroom environment;

• availability of the business group to produce prototypes of some students’ projects.

The brief was planned before the academic year of 2017/2018. The aim was a collaboration of academy and industry. It took place from early April to late May.

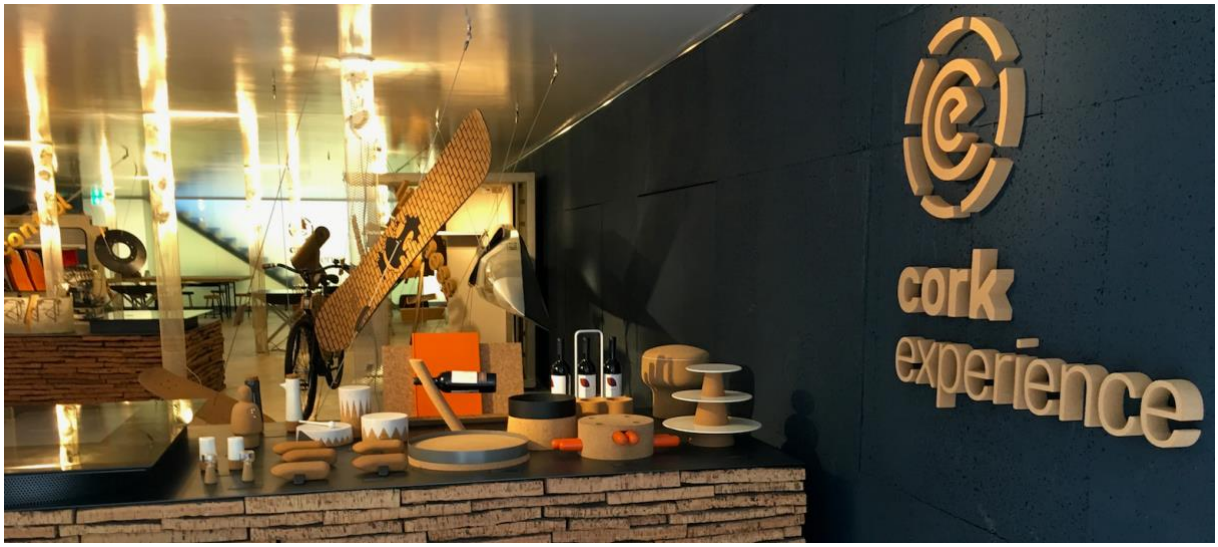

Figure 4. Showroom “cork experience” at Corticeira Amorim. Credits: Benedita Camacho, 2018.

7.1 Choice of partnership & approach

Though partnerships and initiatives similar to this one can be proposed by companies directly to higher education institutions (very common in ULN), in this particular case it was the teachers who autonomously chose and contacted the company/industry.

The choice of “AsPortuguesas” for this partnership came from the need to work with cork, a material of excellence to project in Design, for its sustainable and ecological character and identity value for our country.

The partnership started with a first contact in January 2018 through Amorim Cork Ventures, which brought about the teachers' contact with the CEO of the flip-flops start-up "AsPortuguesas", Architect Pedro Abrantes.

7.2 Partnership articulation

From the first contact the interest of both parties was visible, captivating and indeed motivating. The parties agreed to launch a proposal that would meet their expectations and interests, in the logic of partnership and never in the interest of only one of the parties.

Concerning the synergies between the two parties, it was curious to see Ken Robinson's phrase on the wall of the meeting room at Amorim Cork Ventures (fig. 5), materializing the perspective of both: "A remarkably powerful creative synergy arises when people of different professional backgrounds and skills work together" – Figure 5.

Robinson and his contributions to education are essential for understanding this partnership and inherent method. The author defends (1) creativity in education, (2) technological changes, (3) the capacity for change and adaptability to new times, (4) emotion and knowledge, stressing that the search for the best each one can do for society is often an illusion when distanced from society's real needs.

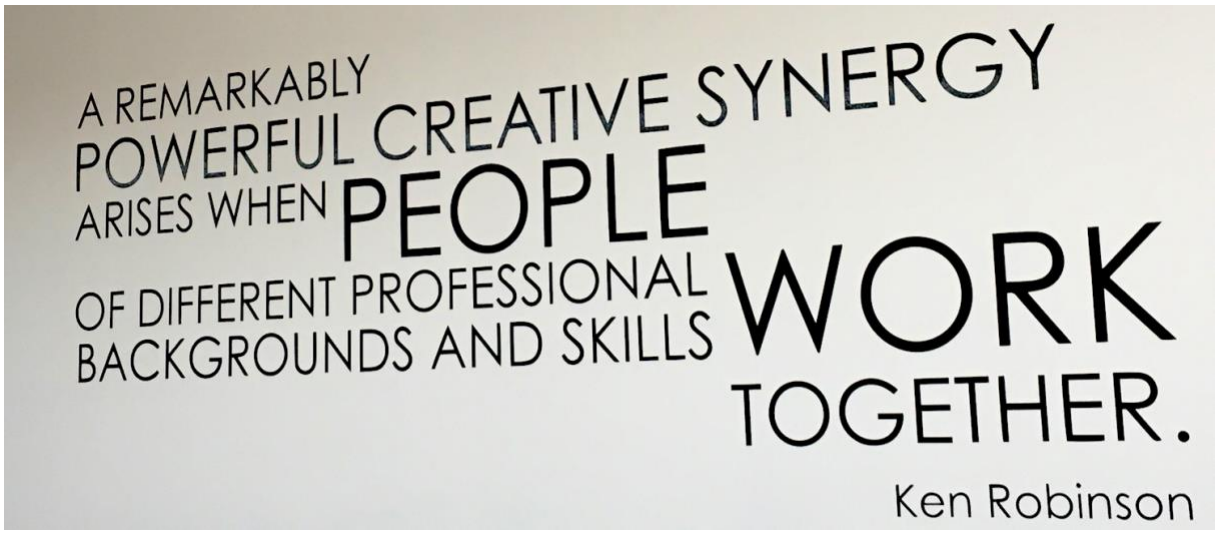

Figure 5. Wall in the Meeting Room, Amorim Cork Ventures. Credits: Benedita Camacho, 2018.

The partnership began with two initial meetings (one face-to-face and one by Skype) of the coordinators of both parties (ULN-FAA and the CEO of "AsPortuguesas") to discover and define interests for both parties, find synergies, and finally, chart together objectives, dates and timeline.

The main aim was to fulfil the market requirements of the flip-flops start-up "AsPortuguesas", as well as the academic requirements of the 3rd year annual curricular unit - Design III of the BA in Design of the ULN-FAA. The partnership was later called "AsPortuguesas - Ideas Contest".

The relationship with the students became effective and official on April 13, with a first study visit to the facilities of Amorim Composites, Amorim Cork Ventures and Kyaia Group, for contextualization of the raw material and of production, where the CEO of "AsPortuguesas" also presented the needs and guidelines of the Ideas Contest - Figure 6.

Figure 6. Study visit to Amorim Composites + Amorim Cork Ventures + Kyaia Group. Credits: Rui Alexandre, 2018.

7.3 Brief discussion & project development

For the 3rd and last year of the BA level course, the definition of the annual syllabus and programme contemplates the aim of the students reaching the capacity to generate their own brief. This competence would be achieved with this partnership, in the "ability to interpret and re-create the brief and the development of solutions".

In regard to this topic we can highlight three essential moments:

- 1. Planning and negotiating involving teachers and CEO;
- 2. Presentation to the students of the guidelines of the project;
- 3. Individual construction of the briefing;
- 4. Project development.

Point 1. Planning

Planning was articulated between both parties. It was defined that the work should intervene in the bi- and three-dimensional design areas (communication, equipment and interiors) to consolidate the vertical competence of the BA level curriculum in Design III.

So, in addition to the graphic design of a flip-flops collection and its respective modular and retractable display unit, the inclusion of a corporate stand to publicize the identity and brand was also defined.

Point 2. Presentation to Students

After the study visits, the CEO presented "specifications" and guidelines for the development of the project. For his potential commercial interest, he also provided the Logo and graphic standards manual and a confidential trend book for the graphic design of a flip-flops collection. During the study visits, students were able to handle the product and ask specific questions.

The outlines for "AsPortuguesas - Ideas Contest" included:

- a) the development of the graphic design of a flip-flops collection with enlargement of the target audience to a more urban niche; inclusion of a 2/3 mm margin around boundaries and holes; logo in high prominence, "Made in Portugal" added;
- b) a modular and retractable display unit for 30 pairs maximum with 140 cm height and 50 cm width;
- c) a corporate stand with a focus on 3B's "Bom, Bonito e Barato" – "Good, Beautiful and Cheap".

Point 3. Construction of the briefing

In their individual development of the final brief, students could interpret and make their own decisions regarding the topics required and the topics that remained open.

The teachers reinforced in class the set of delivery dates and the elements required for each deliverable – Figure 7. These dates should be present in a timeline, developed by the students, with intermediate presentation dates and final defence before the client.

At the beginning of the following week, students had the opportunity to present their briefs and timelines, with different stages of development, for validation by the teachers. Throughout the process, the brief was being re-evaluated and adjusted to the rhythms and needs of each student.

Point 4. Project development

Summarily, the brief was individually developed by each student during the process, but three core deliverables for assessment were required:

- 1. the graphic design of a flip-flops collection;
- 2. a modular and retractable display unit;
- 3. a corporate stand.

Figure 7. Building the brief in classroom environment.

By adding bi- and three-dimensional design areas, the vertical competence of the design curriculum was consolidated. The project also offered students a close business experience through a direct contact with real clients and the cork industry.

During the whole process and experience, several elements were collected, such as images, oral and written reflections by the students, discussion between parties.

The project was realized in approximately 5 weeks, with teachers' monitoring during 12h theoretical-practical sessions per week and two interpolated guidance meetings with the CEO of "AsPortuguesas" at the faculty – Figure 8.

The first intermediate presentation of first solutions and clarification of doubts was held on April 26 in classroom context, simulating a real contact of students / designers with the Client.

The second intermediate presentation took place on May 15, also in faculty environment. The three stages of the work were discussed and again the CEO collaborated.

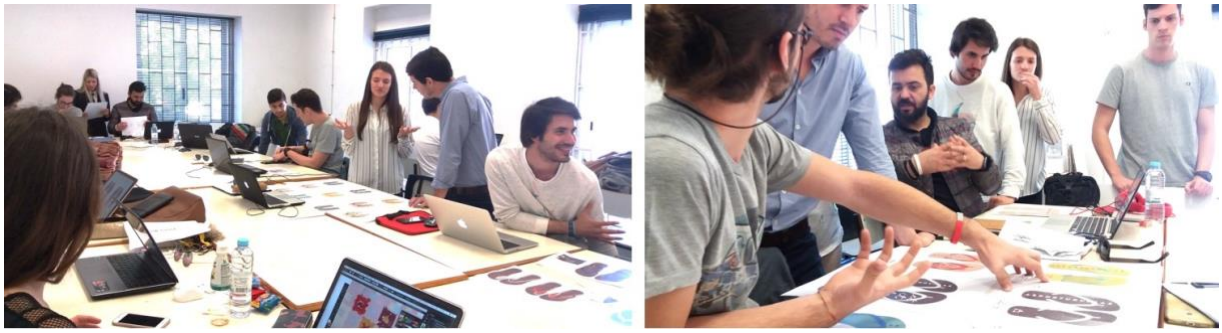

Figure 8. In-person meetings with the "client" in the context of the classroom. Credits: Rui Alexandre, 2018.

7.4 Project presentation and defence & assessment/awards

The final public presentation of the project (Figure 9) was held in business environment, at the premises of Amorim Cork Ventures on May 22.

Figure 9. Some of the students 'projects: flip-flops collection, display unit, Stand. Credits: (left to right) Daniel Leal, Marina Dimitrov, Diogo Monteiro, 2018.

The final defence took place in the auditorium of Amorim Revestimentos, in Mozelos, Santa Maria da Feira, according to the method, steps and timeline previously defined.

The students defended their projects individually, for about 10 minutes, and at the end of each presentation the representants of the Amorim Group made a short comment. Figure 10 shows some students when defending their projects.

Figure 10. Students defending their projects. Credits: Benedita Camacho, 2018.

In attendance were the 16 students, Architect Pedro Abrantes (CEO of "AsPortuguesas"), Dr. Nuno Barroca (Vice President of Corticeira Amorim), Mr. Fortunato Frederico (President of Kyaia), Dr. Paulo Bessa (Director of Amorim Cork Ventures), Professor Peixoto Alves (Director of the FAA, ULN) and Professors Rui Alexandre and Benedita Camacho (professors of Design III) – Figure 11.

At the end of the presentations, the assessment/awards by the Industry jury panel took place, focusing on the products' commercial exploitation.

It should be noted that teachers, although members of the jury, played a secondary role in the decisions, as happens with thesis advisors in public defences, expressing only an informal opinion on the decision of the remaining members of the jury. The jury distinguished students' proposals for the three categories: graphic design of a flip-flops collection, modular and retractable display unit and corporate stand. Exceptionally, given the quality of the students' proposals, two proposals were distinguished in graphic design of a flip-flops collection. In the other categories, only the best proposal was distinguished.

It is important to stress that the academic objectives were clearly distinguished from the premises of the prizes awarded by Industry. Students were aware that the curricular assessment, which had taken place before the awards ceremony, had different parameters and was totally independent of the evaluation / award of the Industry jury.

Figure 11. Presentation of "AsPortuguesas Ideas Contest"- Santa Maria da Feira. (photo courtesy Paulo Bessa, 2018).

8. Analyse, results and discussion

The industry feedback from the representatives of "AsPortuguesas" and their partners (Corticeira Amorim and Grupo Kyaia) was extremely positive and motivating.

They praised and appreciated the proactivity and audacity of the challenge and showed their complete openness for future proposals, even considering other methodologies as described in Kaklauskas et al, 2017.

According to the industry representatives, the results presented as well as the human relationship generated made the experience fluid and stimulating, adding value for both parties.

They also mentioned that the perspective of the students, of an age group identified with “AsPortuguesas" products, allowed new reflections, until then not identified, on their brand image and products.

Through written contributions and individual reflections, it was also possible to collect the students’ perspectives, based on the identification of difficulties, challenges, threats, weaknesses and strengths (adapting SWOT analysis):

• Greater difficulties: in time management; in autonomy in the construction of the individual brief; in developing ideas with a shared discussion with the "client"; in contact and presentation in a business environment; in lack of creative freedom to intervene;

• Greater challenges: responding to the challenge; theoretical-practical academic work; responsibilities; group dynamics; working on different design fields simultaneously; interpreting the brand-identity of "AsPortuguesas"; materializing the project / product for a world scale;

• Greater threats: limitations imposed by the CEO of "AsPortuguesas"; impossibility of knowing all the productive process (all phases); short time to complete the tasks; diversity of the target audience; some lack of brand direction; no opening to break with the conditions imposed by the CEO of "AsPortuguesas";

• Fragility: Despite the product ‘s excellent characteristics, students identified fragile points in the brand – it is essential to improve and adjust the product, the brand's visual and corporate identity.

• Positive aspects: working for a target audience of the same age (as the students).

Before the reactions and attitudes of the students, the teachers’ perspective was a succession of multiple emotions. On the one hand, there was a strong pressure of real external censure, as if students were professional designers; on the other, there was great motivation in the possibility of intervening in a real product for a world target.

In the case of finalist students of BA level (20 years old), the teachers sought to give them more autonomy and responsibility of response – freedom in time management, individual construction of the brief and individual selection of theoretical-practical resources – and, at the same time, responsibility in setting limits to the CEO’s wishes on the eve of deadlines.

During the process (Figure 12), we observed an interesting individual and group motivation and work progression, even in the absence of significant return / reward, with different and new creative limitations, a very short time for all tasks, with no possibility of a more regular contact with the CEO (or when students wanted) and with no certain implementation of the product. Despite all these factors, the students’ motivation was impressive.

Teachers somehow shared the students’ view that there was a need to better understand the productive process (at all stages) and that there might have been more freedom to intervene in some creative aspects to potentially improve the product.

Finally, and in regard to the academic curriculum in Design and this specific case study, it is possible to highlight that two of the main aims of the annual unit Design III were fully accomplished - awareness of the professional design context and adaptation and implementation of processes and products of design in real context.

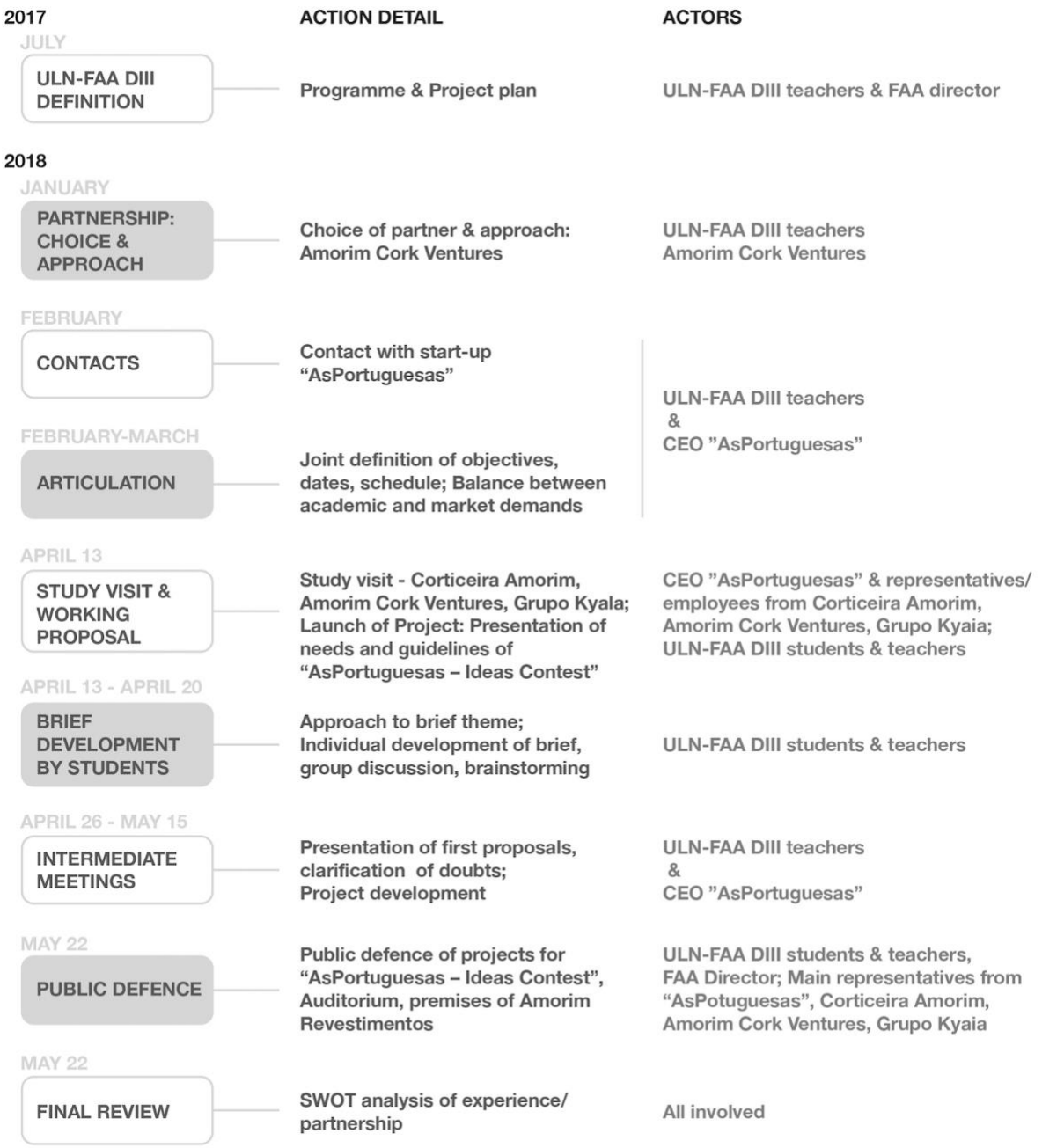

Figure 12. Data and analyse of partnership.

9. Conclusions

Design education, at first cycle University BA level, is fundamental in its real implications for the design profession and for students' future as designers and/or researchers. The academic curriculum in Design should be based on a plural contact with art, science, technology and the business world. This understanding is framed by an interdisciplinary world underlying the discipline of design, never

neglecting theory in favour of practice, considering that both are essential for real innovation, sustainability and social responsibility.

This case study on university-industry collaboration, based on a partnership between the FAA of ULN and the start-up "AsPortuguesas", clearly showed the success of the partnership and the positive synergies it generated in the present curriculum of Design Education, taking into account present technological, cultural, social, economic and ecological development.

There emerged clear advantages and disadvantages to real briefings in academic environments. It was possible to draw several interlinked conclusions in the triangle university-industry- society, answering our guiding questions focused on students' education and training – namely, on the subject of time management, students' individual brief development, contact with real clients, individual responsibility, group competition, interpretation of brand identity, distinct theoretical approaches, start to finish access and process management, real target audience, academic evaluation versus business evaluation (process vs. outcome).

With reference to the interest expressed by the start-up "AsPortuguesas" in the students' contributions, and according to the Design Ladder (Figure 1), it would clearly point to a possible growth for level 3 or 4. However, this development seems to depend on a commitment to a systemic approach that addresses real user needs, innovation and development, as well as multidisciplinary collaborations (training skills that are also essential to design training). This perception, also partially understood by the students, was understood by the teachers as one of the main results of the formative strategy.

As an overall conclusion, design education, when isolated from industry and society, configures an incomplete systemic approach. Our case study, integrated in a 3rd year annual unit - Design III, emphasises the importance of a close relationship between academy and industry in teaching, not only in terms of student growth and skills, but also as a tool for integration, for innovation, for research and for reinvigorating the nature and quality of business.

A healthy relationship between academy and industry can bring about new reflexive practices and differentiate values capable of generating significant positive changes in both parties, building better perceptions of people and society. Unfortunately, in Portugal this practice is still uncommon in design curricula.

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