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By invitation only: A multidisciplinary framework for an industry-led design approach

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Abstract: Considering the issues faced by education during the pandemic, the need for design programmes to synchronise with the industry is rather essential. The disconnect between design students' studio practice during the pandemic has aggravated the situation further, considering that the most appointed defect of design programmes is their low involvement with the industry in multidisciplinary projects. What benefits for design students and Higher Education Institutions (HEIs) to participate in industry-led projects? How can those be implemented, considering the recovery state in which many design programmes currently are? Through a survey with students who participated in this brief (N=32), and interviews conducted with the alumni who mentored them during the project (N=8), this mix-methods approach will refine the framework used in this project, involving industry partners and design programmes, providing insight on how students can benefit from such projects, creating another approach to connect them with the industry, other than a traditional internship.

Keywords: design; higher education; industry; framework

1. Introduction

The discussion around design education is not new, nor is the topic of industry-led projects in design education (Adams et al., 2013; Friedman 2012; Wormald & Rodber, 2008). The pandemic has contributed to the acceleration and exacerbation of deeply rooted issues, such as the lack of connection between design education and the industry, other than the frequent use of internships to give students an inside perspective of what their future could look like. However, although highly eye-opening in some ways, internships do not reflect the vast majority of what the industry is asking designers. The designer's role has significantly evolved, and non-design companies frequently apply design methodologies (Noel, 2020). But what are the benefits for design students and Higher Education Institutions (HEIs) to participate in industry-led projects as part of their programme?



We will start this research with a literature review on multidisciplinary and industry-led approaches in design education and an overview of the BA programme, and the brief we proposed for the first time to the students. Then, we will approach the quantitative results obtained with the students at the end of the project and qualitative appreciation of this initiative with the alumni-mentors who took part in it.

This study will reflect on the results obtained with the framework we applied and possible avenues for other multidisciplinary programmes where industry professionals are directly involved in the curriculum and design briefs.

2. Literature review

2.1 Multidisciplinary approaches to prepare students for the industry

The global pandemic has somehow accelerated many predictable changes, such as the recurrent use of digital tools for communication and collaborative work (Fernandes, 2021). Still, it has also been the catalyst of a profound disconnect between design students' skills and their preparedness for the reality of the industry. The discussion surrounding industry-led projects in design education is still open (Adams et al., 2013; Friedman 2012; Wormald & Rodber, 2008) and offers models and suggestions for industry-led practice and studio engagement through tools and methods used in the industry (Bergman, 1998; Friedman, 2012; Fung Shung-Yu & Choi Yuet-Ngor, 2001). Creativity and value creation must remain the main focus in design education (Wilson & Zamberlan, 2017). However, it is essential to note that the primary concern of HEIs is to provide the best skills and tools to their students, preparing them for the sometimes-harsh reality of life as a professional designer. Yet the connection with the industry is sometimes hard to achieve for educational institutions (Ginestié, 2002), having to provide extensive and regular studio practice for their students with the proper implementation of industry-led projects. Higher education typically uses internships to confront students with the industry, yet these experiences are insufficient and sometimes lack multidisciplinary approaches.

Moreover, internships can be hard to put into place (Doloswola et al., 2011), and their efficiency is difficult to measure, as it depends on too many variables. Nonetheless, this is not a paradigmatic shift but an exacerbation of the past two decades (Wormald & Rodber, 2008). For design education, creating connections between practice, creativity development, and industry in a multidisciplinary way is essential (Wilson & Zamberlan, 2017). Nonetheless, understandably challenging, as it involves many players, and from industry experience to teamwork and time management (Liang et al., 2020; Bergman, 1998), the expected outcomes are multiple. As design education evolves and progresses through many different influence factors (Noel, 2020), the need for industries to apply design methodologies is also high and valuable (Tanco et al., 2009).

Moreover, being multidisciplinary in design education is highly valuable for students, as their professional path might very likely lead them to non-design companies that seek designers

for research or decision-making processes (Pontis & van der Waarde, 2020). The profession and the designer's creativity are also expected to thrive in many non-design workspaces (Lee et al., 2019). These multidisciplinary environments are essential to recreate in the classroom (Self et al., 2018). Having multiple skills and a high level of adaptation is required of designers from the industry (Crosby et al., 2019). Partnerships and collaborative work in practice are also significant aspects to explore in education to prepare students for the workplace (Franz, 2008). Moreover, the need for design briefs to set the tone for a professional aspect of the environment where failure is also part of the iteration process is essential (Noel, 2020; Swanson, 2020).

Design education needs to work closely with the industry (Crosby et al., 2019), as courses need to follow the industry's fast-paced changes and needs. We will now tackle the focus of our research, with an introduction to and the brief proposed to the students, involving alumni of the programme, who are currently working in different professional fields. Moreover, we aim to show that the triangulation between education, industry and community can foster a cohesive integration for design action and design-as-experienced outcomes.

To be compliant with the ever-changing demands of the creative industry, the Bachelor of Arts (Hons) Design Communication programme is built on a robust practice-based teaching and learning methodology. It centres on incremental learning that surpasses core skills, knowledge and reflection in design communication. The main objective behind the academic developments of this programme roots in the engaging and sophisticated demands of society, which are constantly changing. Students evolve towards becoming thinking designers, fully equipped with skill sets required to excel in the current industry. This programme allows students to specialise in design communication, namely editorial design, digital media, advertising, experience design and service design.

2.2 A look at the Design Communication BA programme

On top of the practice-based studio model, industry exposure is a critical factor in developing “the designer as a reflective practitioner” (Schön, 1983). The programme seeks to expose the graduating students to varying industry forms through workshops, industry talks by renowned designers, live projects, local and international competitions. These exposures allow them to apply their knowledge in real-world situations, build up their portfolio, and start essential relationships with relevant professionals and companies. The Industry and Community Engagement Module (B-DC331/ICE) offered at the final year of a three-year course is designed to enable students to broaden their knowledge of the cultural and creative industries by situating them as learning professionals within a professional work environment. Students can choose between Option A: Industry-based Internship(s) or Option B: Negotiated Projects. The former requires them to identify their interests and career-trajectory and independently source internship opportunities. These opportunities should be in an organisation where the job functions are related to their discipline. The

internship may be a long stint with a single organisation or an accumulation of multiple terms to accumulate a minimum of 200 hours of on-the-job training. The latter matches the students with industry partners, local or international, that will, in turn, provide an ideal platform to develop a formal collaboration or mentorship opportunity for them. This is a shift from an earlier model of a traditional work placement that proves to be rigid and outdated to cater to the demand of the emerging practices and the new demographic of student learners. The current infrastructure is predicated on a “finishing school” model that aligns the disconnect between academia and the industry through strategic mentorship arrangements.

2.3 By invitation only: description of the brief

For the Industry and Community Engagement module in the School of Design Communication, which is taught in the fifth semester of the BA programme, students were tasked to work on a brief titled; “By Invitation Only” featuring a unique mentorship project with design alumni from the BA Hons Design Communication programme. These former students are currently working in different Singapore-based organisations; Tan Tock Seng Hospital, MullenLowe, Grab, Shopee, Agency and DBS Innovation Lab, and one independent designer based in New York, for a total of eight invited alumni-mentors. These alumni have graduated from the Diploma and BA programmes of the School of Design Communication between 2003 and 2020. They are now working in very different companies, thus following our multidisciplinary focus. The project has been designed to provide insights from the industry to students while tackling additional design briefs, themes from COVID-19 pandemic, social structures and developing for the community, user-experience design in healthcare systems, behaviours through design and fintech innovation.

In this seven-week long project, students consulted weekly with their alumni-mentors whilst working on the design briefs proposed by them. This experience also allowed students to discuss the shifts in the industry with their alumni-mentors, as they considered emerging work patterns both in design and non-design areas. Moreover, this project creates a multidisciplinary platform, providing direct industry insights, with the alumni as a medium to connect their practice directly with the students. By bringing students new work patterns from the industry, the module also provides a sense of value creation for the community (Adams et al., 2013).

As stated in a recent study, designed by the DesignSingapore Council to track human resources demands in Singapore:

“COVID-19 has emphasised the importance of being able to integrate strategic thinking in design processes as well as being equipped with both transient and long-term transdisciplinary skills. The pandemic has changed the way people experience, explore and interact, due to restrictions. This has made the creation of unique user experiences a commodity. Designers who are able to design purposefully and to adopt a human-centric approach in their design process will have an edge” (2019, p.13).

To better prepare the students for the professional world, design education must go beyond the industry-led approach and create multidisciplinary fields of work and evolution, with interdisciplinary connection and collaboration with external parties (Friedman, 2012), which is the main focus of this project. Therefore, we will now look at the framework used in this initiative, observe the data collected from both parties (students and alumni-mentors) and analyse it to draw our first conclusions from the implementation of the "By Invitation Only" brief.

2.4 A look framework of the by invitation only brief

The global designers of tomorrow must be agile, creative, and inquisitive about solving problems and responding to emerging design issues, digging below the surface for interesting questions and their probable answers. The "By Invitation Only" project was designed to bring new and insightful perspectives from industry and community into the classroom, with the premise that design must be at the centre of this multidisciplinary approach (see figure 1).

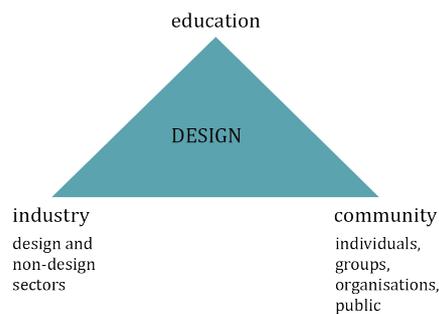


Figure 1. An illustration of how design is at the multidisciplinary crossing connecting industries, communities and individuals.

The approach to the project brief for "By Invitation Only" fosters the divergence and convergence of the design process, positing the multidisciplinary role of design. The whole framework also bridges the gap between the designer and the users, allowing for an open, dynamic and co-creation working method. The collaborative creative effort between the alumni-mentors, students, and end-users became valuable vehicles to navigate complex design problems. The learning framework (figure 2), adapted from Richard Buchanan's Four Orders of Design (2001), supports the learning objectives and considers the multi-hyphenated roles that today's designers are expected to take on; creator, researcher, facilitator and manager.

As design professions continue to transform and evolve and more complex design problems become apparent, the learning framework defines a structure to be adopted for future projects for students to refer to when designing with industry and designing for communities.

It is crucial to note that this model is scalable depending on the timeframe and the number of alumni-mentors engaged for future projects.

Learning Framework pedagogical approach
Adapted from (Buchanan, 2001) Four Orders of Design

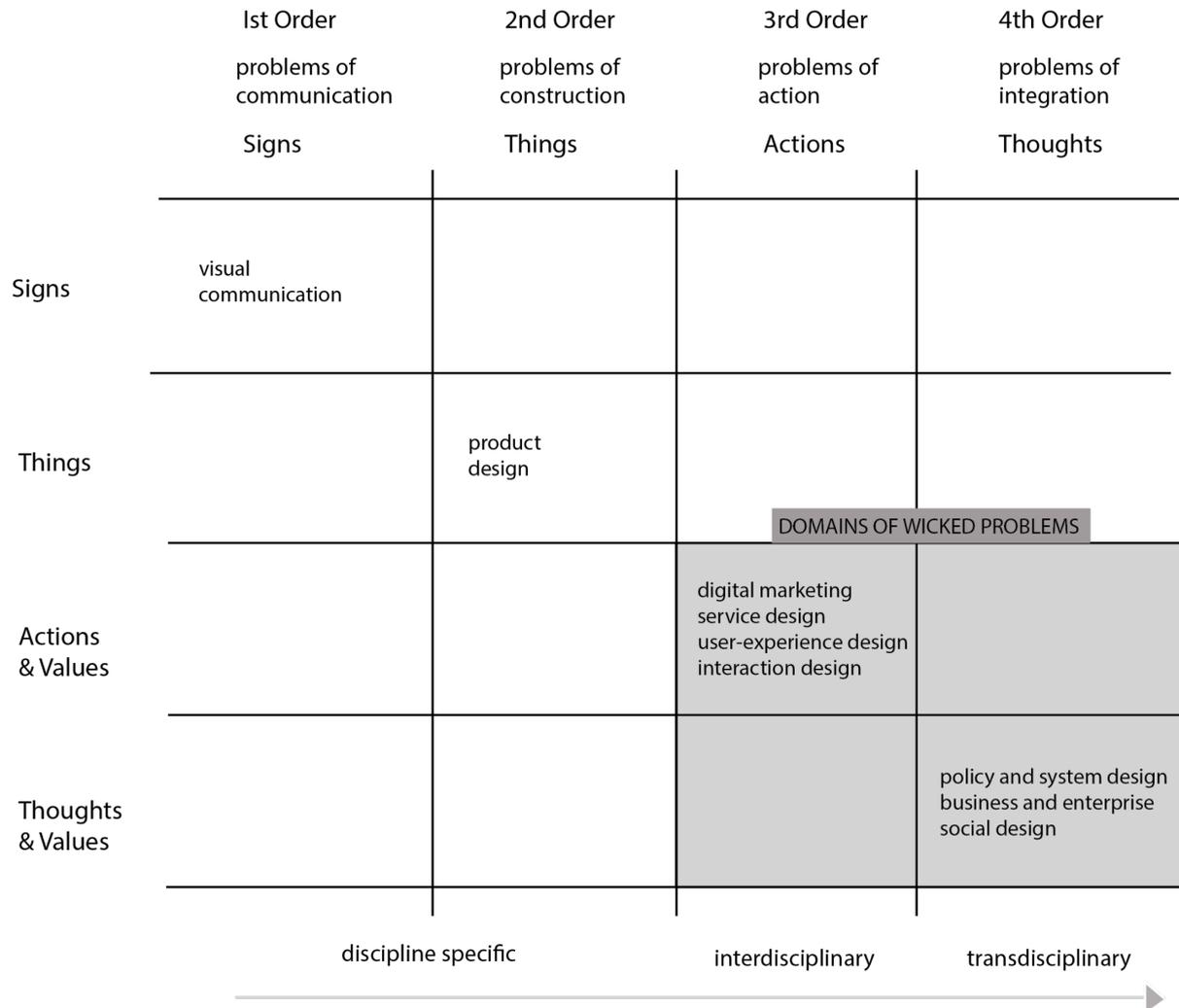


Figure 2 Learning Framework adapted from Buchanan’s 4 orders of design (2001).

3. Methodology

As previously mentioned, a mixed-methods approach was used in this research to better assess the perception on both sides of the project: the mentors and the students.

On the one hand, we interviewed the alumni-mentors separately (N=8), using an online form where they could expand on the semi-structured questions. The qualitative outcomes expected from these interviews are related to their thoughts on the project, its benefits for the students (as former students of the same programme themselves), and possible impacts for future professionals. Finally, we also questioned the alumni-mentors on their vision on the importance and implications of keeping a close relationship with their former HEI.

On the other hand, we surveyed the students (N=32) in the last week of the project, after the final presentation, to ensure a fresh, honest, and unbiased perspective. We used Google Forms to create and communicate the survey to the students, the results were collected using the same tool, and bivariate analysis is applied here. Although the sample can seem reduced, it comprises the entire cohort of students who willingly participated in this project rather than an internship (the other option available in the programme module). The questionnaire was composed of two questions of sample characterisation and ten questions using the Likert scale to determine their level of satisfaction, motivation, benefits and confidence, among other variables. Finally, respondents were asked to use qualifiers and adjectives to describe their experience in the last question. The results obtained in each method were treated separately, using triangulation with the literature review to draw the main conclusions of our study.

4. Findings

4.1 Quantitative results obtained with the students (N=32)

Starting this analysis with the characterisation of the survey sample (see table 1), we can observe a low number of respondents (n=32). The sample comprises roughly a third of the whole cohort for that programme level. We explain this by the fact that the module involves, as described earlier, the option for students to pick between the completion of an internship or two community and industry-led projects, the second option being the one explored here.

Table 1. Characterisation of the survey sample

Gender	78% Female	22% Male	
Age	Youngest 19 years old	Oldest 27 years old	Average 22 years old
Total sample	32 students of the BA Design Communication programme, level 3 having chosen the industry projects instead of the internship option.		

The sample is also representative of the whole cohort. It comprises 78% of female respondents and 22% male respondents, with an average age of 22 years old, the younger respondent being 19, and the oldest being 27 years old. The following results are based on a series of 10 questions using a five-point Likert scale, with one corresponding to “strongly disagree” and five to “strongly agree”.

Starting with the first question (see figure 3), where students were inquired about the level of insightfulness regarding the industry’s expectations of designers, the answers were overall positive, as we split the whole sample into both “agree” and “strongly agree” levels.

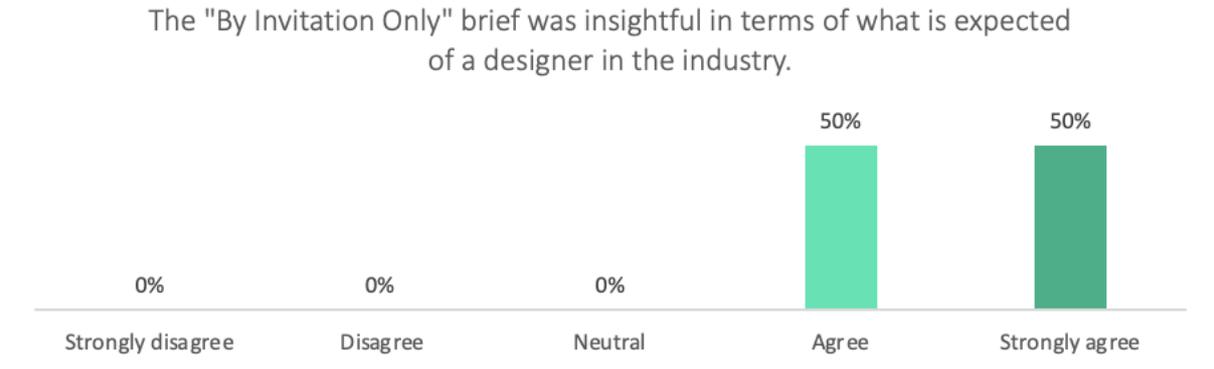


Figure 3. Level of agreement between insightfulness of the brief regarding the reality of the industry.

Regarding the next question, we questioned the sample on the experience benefits (see figure 4), as well as on their level of confidence regarding their future in the industry (see figure 5).

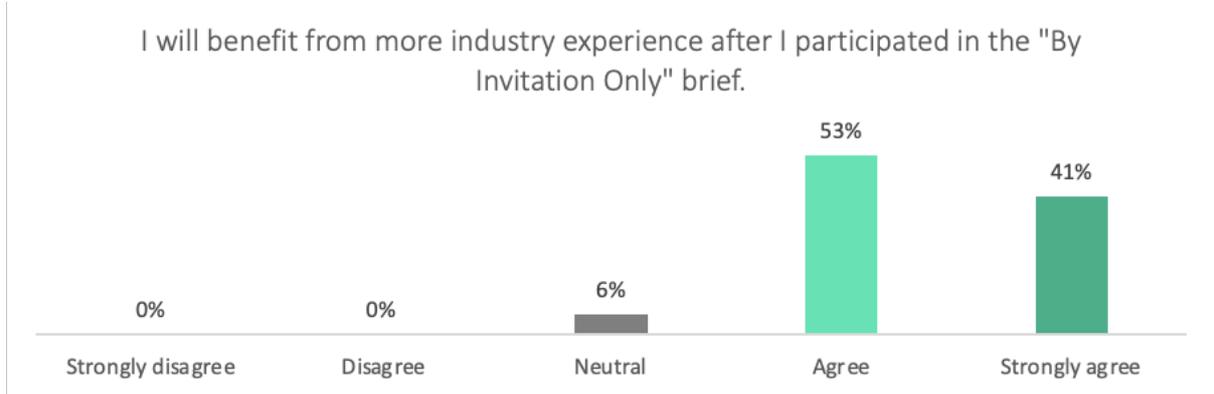


Figure 4. Level of acknowledgement of the industry experience provided by the project.

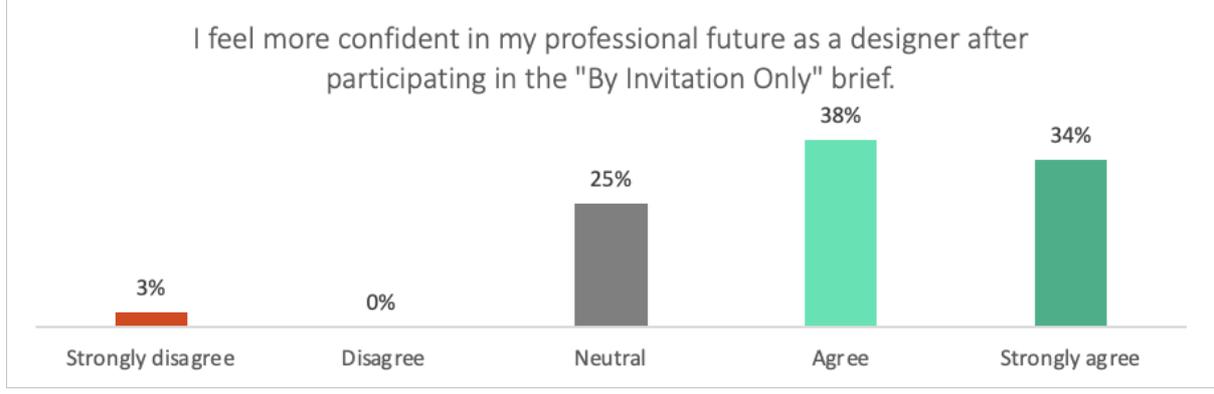


Figure 5. Level of confidence regarding personal future in the industry after participating in the project.

In both figures, we can observe that the students regard the experience as beneficial, with a total of 94% agreeing, and only 6% remaining neutral on that question; as well as 75% of students admitting they feel more confident about their professional future since

participating in the industry-led project. Figure 6 shows that 97% of the sample feels more knowledgeable about the designer's process. In contrast, figure 5 indicates that the sample's same percentage felt more motivated to work directly with industry professionals.

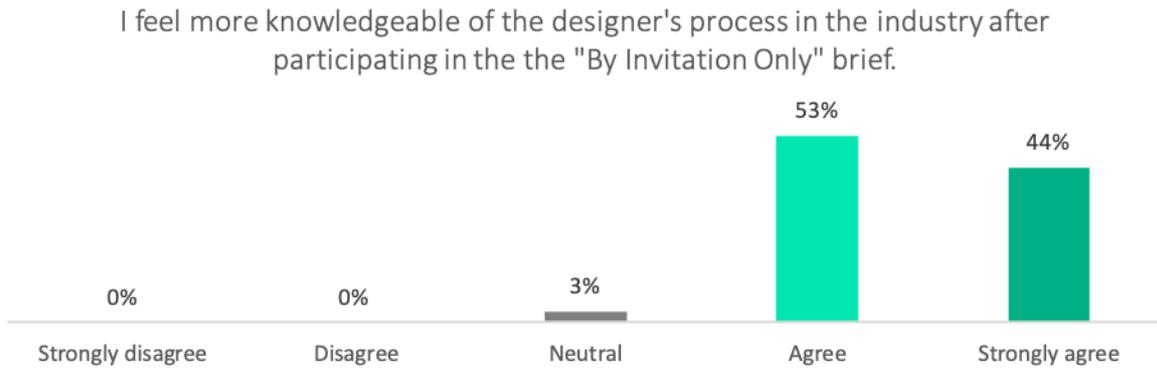


Figure 6. Level of knowledge of the professional designer's activities after participating in the project.

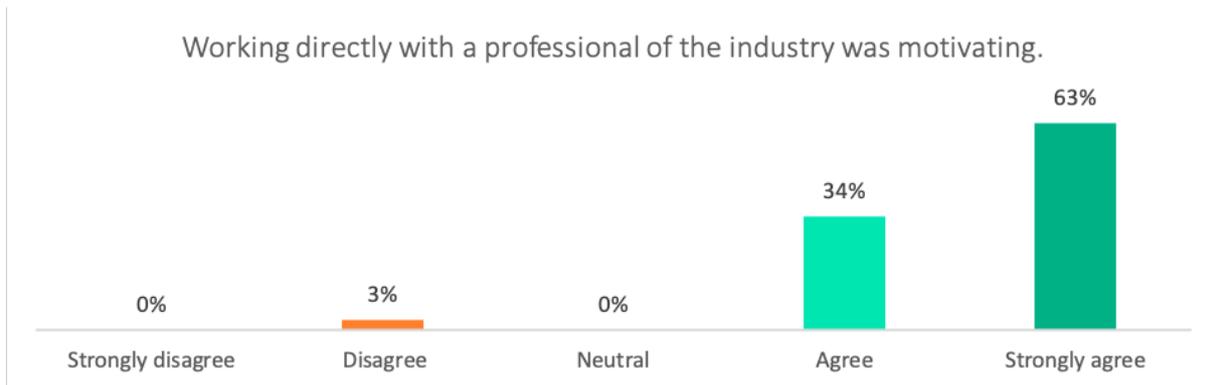


Figure 7. Level of motivation provided by the collaboration with an industry professional.

Moreover, students acknowledged their excitement over participating in a project where designers working for very different companies themselves proposed their briefs to them (see figure 8), with 78% agreeing with this statement.

This is understandable, as the context of real-industry projects is more enticing for students, and working even remotely can be motivating if the organisation allows for group activities (Fernandes, 2021). Yet it is still important to note that 19% of the sample remained neutral, and one student disagreed with the statement (3%).

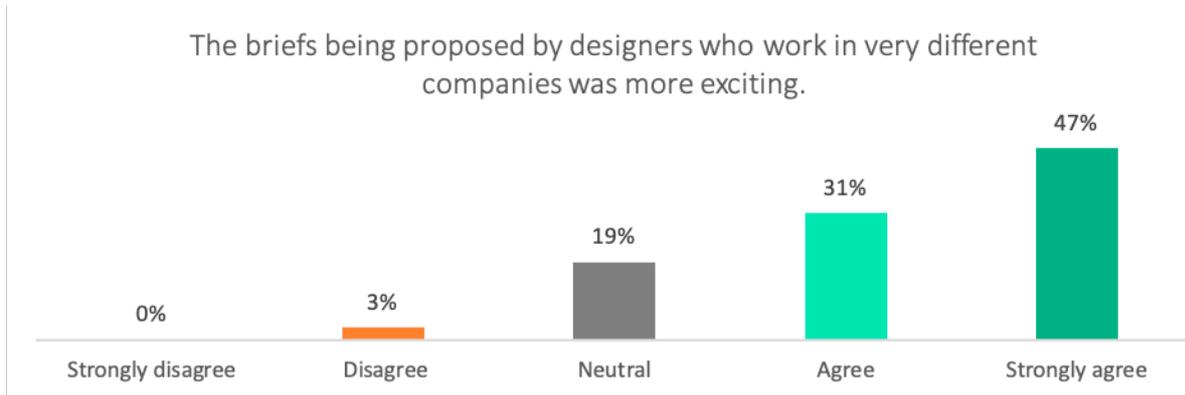


Figure 8. Level of excitement provided by the diversity and actuality of briefs.

Furthermore, one of the main attractions of this project was the connection with the industry through alumni of the same programme. Thus, for students, it is an easier way to relate to their mentors, as they had gone through the same experience. Figure 9 shows that 97% confirm this idea, whereas figure 8 shows that the same percentage agreed that the experience was more enjoyable since the professionals they worked with were former students.

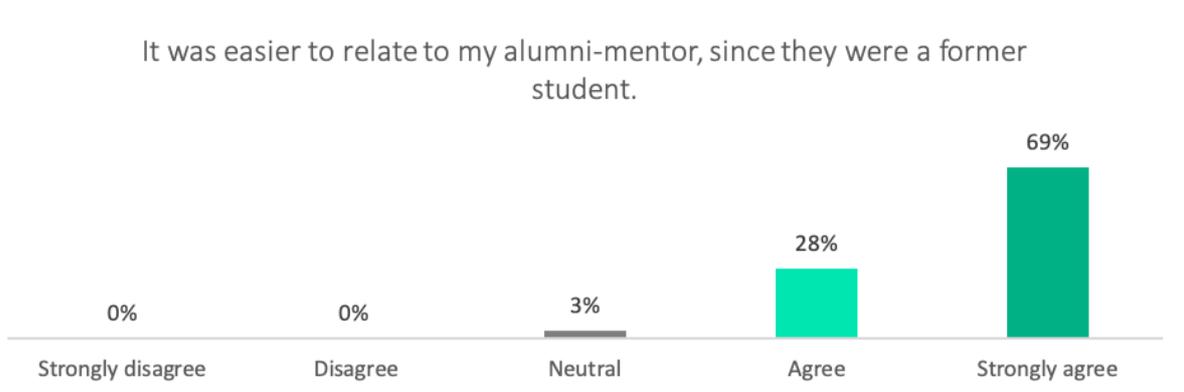


Figure 9. Level of relatability for working with a former student.

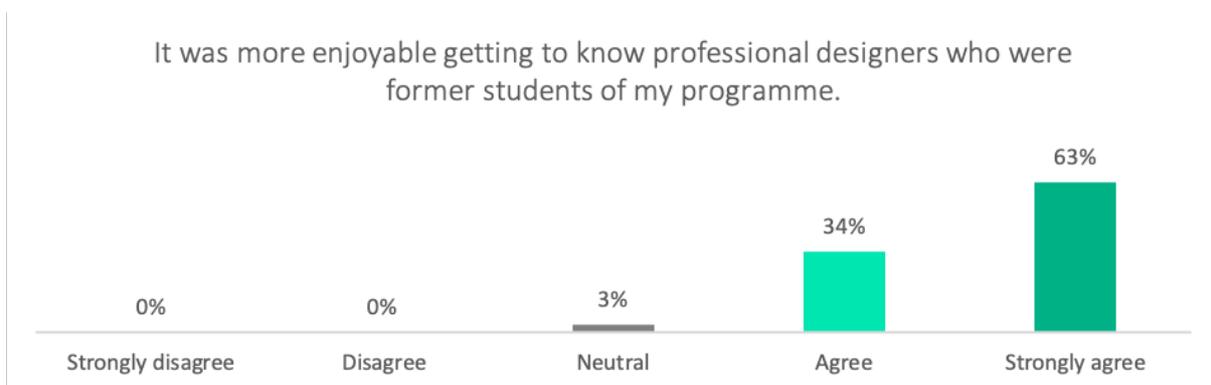


Figure 10. Level of enjoyment provided by knowing professional designers who are former students of the same programme.

Finally, the sample appears overall more knowledgeable of their prospective future as designers, with 88% following that trend (Figure 11), whereas 97% of them declared they would recommend this project to other students (Figure 12).

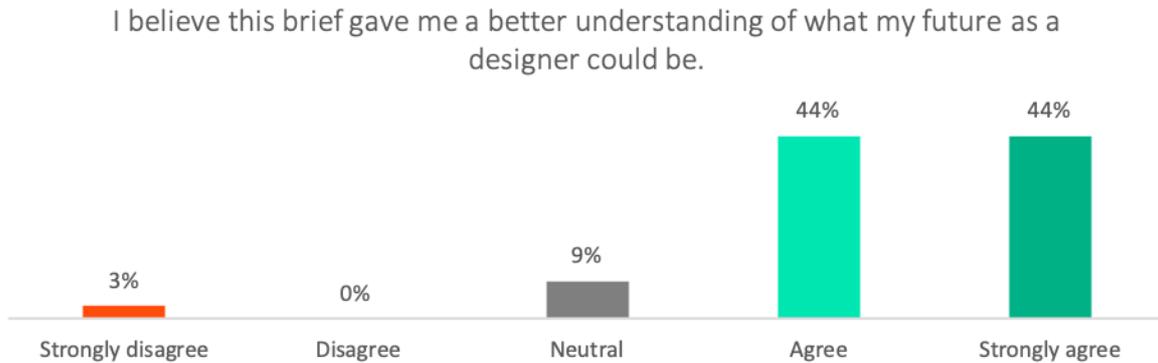


Figure 11. Level of comprehension regarding the industry after participating in the project.

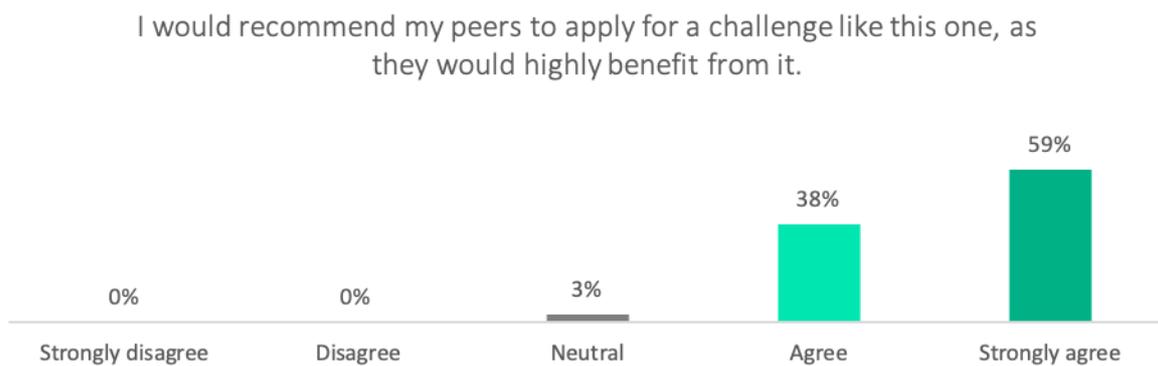


Figure 12. Likelihood to recommend the project to others.

The survey's last question was a follow-up semi-open question where we asked respondents to associate qualitative adjectives with their experience. The main results obtained are presented in table 2. It is important to note that respondents were given the option to select several adjectives to describe their experience.

All the adjectives available in the survey are presented here, even those the students did not choose. All of these non-chosen adjectives were pejorative. These options were the opposite qualifier of each other; adjectives proposed contrasting positive and negative qualifiers. Furthermore, we allowed respondents to add qualifiers to suit their thoughts on the project better, yet only two respondents added adjectives presented in the table. 3. One respondent (3%) added the adjective "interesting", whilst another added "challenging", also adding in the description box: "With Respect to the Brief I had, very insightful and challenging in terms of what is expected out of us when we enter the industry". Overall, we can see very positive

feedback in terms of experience, with particular distinction for the words “insightful”, “relevant”, and “exciting”.

Table 2. Qualifiers and adjectives most chosen by the students to define their experience.

Adjectives/Qualifiers	Percentage of respondents
Exciting	84%
Boring	0%
Too short	44%
Too long	0%
Insightful	84%
Mindless	0%
Important	56%
Unimportant	0%
Relevant	84%
Irrelevant	0%
Relatable	69%
Unrelatable	0%
Interesting (Submitted by respondent)	3%
Challenging (submitted by respondent)	3%

As we are now able better to understand the students’ feedback on this brief, it is relevant to highlight that the choice of alumni was fundamental in connection with the industry. Therefore, it is something to consider seriously and thoroughly to apply this project again in the future. Students felt more comfortable and open to their mentors, knowing that these were former students of the same programme. This also operated on the students’ confidence level for their professional future. The mentors provided insight into the industry, current trends, tools and methods being used with them in a more casual environment where students felt more comfortable asking questions and exchanging opinions.

Moreover, such knowledge is valuable for the students. The vast majority of tools used in the industry change quickly, and adaptation to new ones is crucial for their development as professionals (Ginestié, 2002). Lastly, we observe that the students understood how designers contribute to non-design companies, as the demand for designers is being recognised as essential in many different industries (Pontis & van der Waarde, 2020). We will now approach the mentors' feedback separately, as a qualitative method was used to collect their impressions.

4.2 Qualitative results obtained with the alumni-mentors (N=8)

This brief revolved around the industry, with alumni-mentors standing as the connection between the students and the professional workplace. We, therefore, interviewed these designers on their experience throughout this project. Regarding the impact of such a project on students, one mentor stated:

“Projects like this help students think deeply about what they are good at and what they lack. This experience is strongly advised to all students, especially prior to any hiring process because companies are looking for candidates who can clearly and confidently voice out what they are good at. Companies would then understand the value the candidates can bring to the team and further plan what they can further train them for their personal growth.”

As for the last question, regarding the importance of keeping a tight relationship with alumni to strengthen the connection between education and industry, one of the mentors argued:

“I feel that through these projects, they are working on more than just their technical skills. They are also learning how to break down problems, draw connections and communicate them to an audience in a systematic way”, whereas another added: “It is crucial that the programmes keep in contact with the industry through alumni in order to keep in track of how students translate the input they've got from the programmes into doing something to out in the world”.

Lastly, another mentor added that projects such as this are crucial: “because of the changing needs and tools in the industry. It also gives the student a reality-check that they cannot just “study design” to do well as designers”. This last remark also follows the idea that one of the significant aspects of industry-led projects is the exposure to new tools and methods used in the industry, but more importantly, to show students how quickly they must adapt to these new processes (Ginestié, 2002).

As for future improvements, we noted that one mentor argued: “We spent a lot of time running through individual feedback for their projects. We could have dived deeper if there were only 2 or 3 projects instead of 8”, whilst another mentor concluded that students seemed prepared to receive feedback, but not in a more professional manner, adding: “Graduates will be more ready to perform in a team setting, contributing through their personal expertise while being open to receive inputs from non-practitioners”.

5. Conclusions

This paper aimed to show how multidisciplinary projects like the brief we presented here can strengthen design education's connections with the industry through their alumni. Moreover, we wanted to observe the possible benefits for design students and higher education institutions to participate in industry-led projects. We highlighted the importance for the industry to be as involved as possible in the education of design students since these are the future professionals that will integrate their teams. We started with a targeted literature review on design higher education and the importance of multidisciplinary and industry-led projects for these future professionals. We then presented the BA design communication programme of the School of Design Communication and the "By Invitation Only" brief that was proposed to the students of that programme for the first time. The significant benefits for students are related to the exposure to new tools and methods and the direct insights gained through their contact with the alumni. The briefs proposed were crafted especially for this project, and each mentor posed their research problem to the students and the deliverables and design research process. The results also provide a few recommendations for future implantations and growth of this brief. Firstly, the choice of alumni is crucial, comprising a vast array of professionals with very different backgrounds and experiences must be available. These alumni must enter the project, knowing that they will meet weekly with the students and "donate" their time and energy. The number of students attributed to each mentor is an aspect we will need to improve in future instalments. Students could choose their mentors based on the brief proposed, and therefore, some mentors were attributed to as many as twelve students.

In contrast, others only had two or three to look over, which caused weekly feedback imbalance in some cases, as one mentor noted. We need to address a few limitations in this research. Firstly, we are at the project's first instalment, and we will need to come back to the students who have done this brief after they entered the job market to understand correlations between this brief and their career choices and adaptation. Secondly, although significant, we worked with a reduced sample. We surveyed all students who worked on the brief, but more students will give us further insight.

We are expecting to not only repeat the experience in the years following, adding more players into the mix, but also continue to collect data and analyse the evolution of this project to iterate it and determine its implications with the students as they enter the professional world. Moreover, we expect this venture to be adopted in other courses and institutions, as we believe such initiatives are highly positive and impactful for students. After concluding this first phase, we also expect to provide a revised framework and build a toolkit to apply this project to other settings.

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