AN OUT-OF-SCHOOL DESIGN LEARNING INTERVENTION FOR SECOND LEVEL STUDENTS

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ABSTRACT
This paper makes an argument for design learning as a framework to support the personal and academic development of second-level students. In presenting this argument the author discusses work-in-progress research that investigates the educational value of an out-of-school design workshop. This research places an emphasis on the development of the individual student, by focusing on the process, not the product of design. Focusing on the pedagogical needs of adolescents, the aim of the research is to engage students in a meaningful learning experience, giving them the opportunity to understand and develop their skills in areas such as creative and critical thinking, communication, collaboration and self-directed learning. In this paper the author draws on findings from a design workshop carried out with a group of second-level students over the course of two weeks in a third level institute. By presenting insights uncovered from the analysis and interpretation of data gathered, the author makes a case for the design workshop as an out-of-school intervention that can support the personal and academic development of second-level students.

Keywords: Design education, design process, intervention, confidence, collaboration

1 INTRODUCTION

This research takes place during a time of reform in education, with a shift from schooling to learning and a focus on the learner and the development of key skills and competencies [1]. The European Commission's 'Key Competencies for Lifelong Learning' framework places an emphasis on the lifelong development of skills and competences, not only for personal fulfilment and the ability to actively engage within society, but for the ability to be successful in a constantly changing world of work [2]. Similarly, the OECD's framework for key competencies emphasises the ability of individuals to think for themselves and to take responsibility for their own learning [3]. In line with these, Ireland's National Council for Curriculum and Assessment (NCCA) has developed Key Skills frameworks that emphasise the development of skills through the curriculum at post-primary level [4] [5]. An emphasis is placed on skills such as communication, problem-solving, information processing, critical and creative thinking and working with others [4] [5]. However, it is important to acknowledge that these skills and competences are shaped by more than formal schooling [6]. It has been argued that participation of both economic and social institutions, such as companies and higher educational institutions, is critical [3]. While it is important to define the role that formal education has in the development of skills and competences, it is equally important to recognise how opportunities for this development can be enhanced by extending the learning beyond the four walls of the school. This paper presents a discussion of the potential of an out-of-school design workshop held in a third level art and design college as an opportunity for students to develop such skills and competencies, in line with Irish and European Frameworks. There are numerous arguments in the literature that put forward design as an approach to teaching and learning in second-level education. This research aims to explore this argument further, specifically within the context of Irish second-level education. While research is ongoing, preliminary findings indicate positive outcomes in terms of both academic and personal development.

2 LEARNING BY DESIGN

The argument for the educational value of design is not a new one. Arguments dating back as far as the 1970's propose that design should be considered as a 'third area' of education to sit alongside the humanities and sciences [7]. Research conducted by the Royal College of Art (RCA) argues that the

basic skills and 'ways of knowing' inherent to design should be a fundamental component of education, similar to literacy and numeracy [7]. It is argued that design should not simply be treated as a specialised subject within the curriculum [8] but instead should be considered a core component of everyone's education [9]. The Design Council's report 'Design Education at Secondary Level' makes a similar argument stating that design should be an essential part of secondary education for all [10]. In 2005 key arguments from the 1970s and 80s in the UK were republished, arguing that the proposals put forward then continue to be relevant and desirable today [11] [12]. In the Irish context similar arguments have been put forward with calls for more recognition of design in the curriculum [13] and recommendations for design as a cross-curricular approach to education [14]. Despite these arguments for a broader recognition of design in general education, it remains restricted within subject areas such as Art, Craft and Design, Design and Technology and Design and Communication Graphics.

The research presented in this paper argues that design has the potential to do more for education. Internationally there are numerous active moves being made to implement design as an approach to teaching and learning in general education. In the US the Hasso Plattner Institute of Design (d.school) at Stanford have developed a design thinking approach to learning which they believe has the potential to develop the creative confidence of students in K-12 education [15]. Research conducted by Stanford's REDlab suggests that design thinking can have an impact on the way students engage in the process of learning, challenging them to take risks and to think in new and creative ways [15]. The research also highlights the potential for design thinking to encourage metacognitive awareness and to develop skills in collaboration [15]. Based on a similar belief in design thinking, the Henry Ford Learning Institute (HFLI) has implemented a design thinking approach for use with teachers and students in their network of K-12 schools. In India, designer Kiran Bir Sethi implemented a design thinking approach when founding the Riverside School and the Design for Change (DFC) global movement, which supports teachers implementing a design thinking approach in their own schools. The research presented in this paper draws upon previous research and related work, however it differs in its approach as it investigates the potential of the design workshop as an out-of-school intervention.

3 AIMS OF THE RESEARCH

There are numerous arguments in the literature and active projects that support design as an approach to teaching and learning in second-level education. This research aims to extend this argument further by investigating the effectiveness of an explicit out-of-school intervention as external leverage on school learning, rather than embedding it in the formal curriculum. The research presented in this paper explores the development of the individual student, by focusing on the process, not the product of design. Focusing on the pedagogical needs of adolescents, the objective of the intervention was to engage students in a meaningful out-of-school learning experience, giving them the opportunity to understand and develop their skills in areas such as creative and critical thinking, communication, collaboration and self-directed learning. The aims of the intervention were: (1) to expose students to new ways of learning, (2) to develop student's key skills and competences, (3) to encourage metacognitive awareness among students and (4) to empower students to take ownership over their own learning. The research, of which this paper is part, explores the impact and effectiveness if any of an external design-based intervention into the conventional school process.

4 HEDGE SCHOOL DUBLIN: A DESIGN AND LEARNING CAMP

Hedge School Dublin was a design and learning workshop for second-level students that took place in NCAD over the course of two weeks. The research discussed in this paper was carried out as a way of investigating a design-based learning process in an out-of-school context as an approach to supporting the personal and academic development of second-level students. In total twenty-six students from ten schools across Dublin participated in the design workshop. The students were recruited from secondary schools linked to outreach programmes in NCAD and Trinity College Dublin. The students ranged in age from 14 to 16 years and came from socio-economically disadvantaged backgrounds. The majority of the students attended as part of the Transition Year (TY) programme in their schools, with the exception of four students who were in their fifth year. Transition year in Irish second-level schools is an optional exam-free fourth year between the junior and senior cycle. All of the students were selected by their teachers to attend, many of them being chosen as they had shown artistic ability, while others were sent with the hope that the workshop would have a positive impact on them personally and academically. The workshop facilitators consisted of the author, a colleague in NCAD

and a designer external to the college. While all three facilitated activities throughout the two weeks, the author conducted the research and evaluation presented in this paper.

4.1 The learning environment

An experimental learning environment was designed for the purpose of the Hedge School workshop. This learning environment shown in Figure 1 was situated in the NCAD Gallery, a blank space within which the learning experience could take place. It was important to provide this blank canvas for the students to give them the opportunity to take ownership over the space. Round tables were chosen as communal group workspaces for the students to facilitate collaboration. The environment was left as an open space with zones created by the layout of furniture for the different activities to take place within. Three round tables were positioned on either side of the gallery for the six groups. Each group-work space also contained a vertical working space to encourage the students to stand up and work during activities and also to provide dedicated areas to display their ongoing work throughout the project. In the centre, a breakout zone was created with several beanbags and a bookcase with books and games for the students. Flexibility was key in the design of the environment. With no board or projector, the space had no dedicated instruction zone. Instead a mobile unit with a plasma screen that could be moved freely throughout the space was used to show presentations and videos. With a large area left open in the centre of the room, the students could easily gather for instruction and discussion sessions. Materials for sketching and prototyping were also stored on a shelving unit with castors so it was free to move throughout the space. As the gallery has a full window facade on to Thomas Street, the learning activity happening within was visible to the wider community beyond the college. Over the course of the two weeks the students transformed the space with their work and made it their own.

Figure 1. Hedge School Dublin Learning Environment

4.2 The learning experience

The design of the workshop was created by adopting and experimenting with approaches from design education and design practice. This was shaped by input during the planning stages from all three facilitators. The design of the learning experience for this instance of the workshop was based on a model developed by the author and piloted through a series of exploratory workshops. For this instance of the workshop modifications were made to the design and format, based on lessons learned, as well as on the particular objectives of the study. The two week programme was structured around a five stage design process, informed by various design processes, in particular the design thinking approach from the K-12 Lab in the d.school [15]. The five stages of the process were 'Empathise', 'Define', 'Ideate', 'Prototype' and 'Test'. The stages of the design process were used to give structure and to scaffold the learning experience. During the first day of the workshop the students were brought through a design bootcamp session as a way of introducing them to working in groups, doing research, coming up with ideas, sketching, prototyping, presenting ideas and giving feedback. Following this introductory day, the remainder of the workshop focused on one design project. In order to engage the students in a meaningful and relevant learning experience they were given the design challenge to 'Design for 21st century learning'. The students were assigned groups to work in for the duration of the workshop.

During the 'Empathise' phase on the second day a combination of instruction and guided group activities were led as a way of giving the students an understanding of the background and context of their project. During this session a series of guided activities focused on 'learning about learning' using the Key Skills framework shown in Figure 2 as a basis for group work and discussion. The second half of this day consisted of a combination of instruction and group work to prepare the students for doing field research. On the third day the students returned to their schools in the role of design researcher, working to research and understand the needs of their users. On the fourth day the 'Define' phase commenced with the students working in their groups to combine and make sense of the research gathered from their schools. The students finished the day by presenting the key problem area or opportunity that they would take forward. On the fifth day the 'Ideate' phase consisted of the students working through a series of brainstorming, mind-mapping, sketching and other idea generation activities. Following a break from the workshop over the weekend the students returned on the Monday, the sixth day, to work through idea development using sketching and small-scale prototyping. The seventh and eight days focused on the 'Prototype' stage of the process with the students using a variety of techniques and materials from physical to digital to make their ideas come to life.

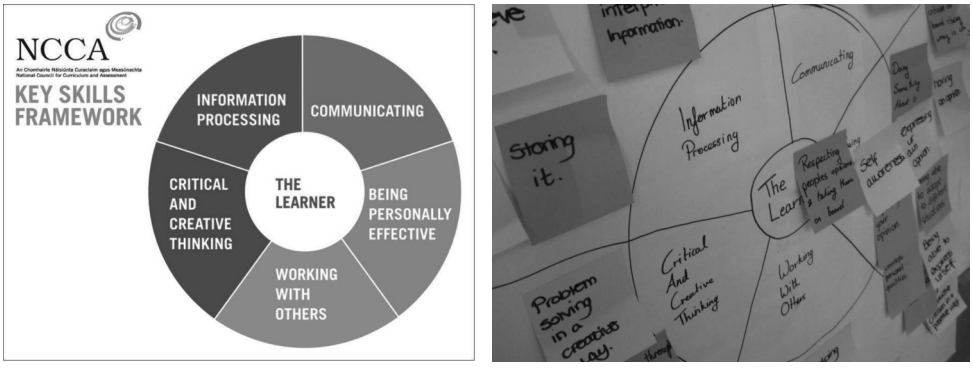

Figure 2. NCCA Key Skills Framework Workshop Activity

4.3 Public engagement

A key objective for the research was dissemination of the activity throughout the workshop. For this reason the visibility of the workshop was a key feature when selecting a space. In addition to this a website was created as an online space to share the ongoing work. On the website, each project group had their own blog space giving them an opportunity to reflect on their experience and to have their voices heard. One of the core aspects of the public engagement was a live demo day, which gave the students a platform to display their work and to discuss their designs and experience of the workshop. This display of work and interaction with the public took place in the context of the gallery as a learning space, the space in which the students had worked through the different stages of the design process. This gave the students the opportunity to develop their communication skills by interacting with the public. By opening the gallery to the public and by inviting the students' parents, their schools, key stakeholders, and the wider education community, the aim was to highlight the potential of design learning as a way of preparing young people for new challenges, new roles and new ways of learning.

4.4 Evaluation

In order to evaluate the learning experience a qualitative research methodology was adopted. Surveys and focus group interviews were the primary data gathering tools employed. The evaluation was carried out following the intervention. A survey was designed to capture the students' experience of the workshop and to attempt to evaluate their perception of the learning experience and how this impacted upon them. This survey was administered to the students following the demo day on their final day of the workshop. During this day the researcher also carried out two focus groups with a sample of participants from different project groups and schools. The data captured from both the

survey and the focus groups was analysed in order to extract codes. Further analysis of the data was carried out in order to identify themes or categories. Additional data was gathered throughout the workshop in the form of the student's creative work, however this does not form part of the discussion in this paper.

5 DISCUSSION AND CONCLUSION

This paper presents the immediate perceived impact articulated by the students following their experience in NCAD. The sample size for this research is not large enough to draw any generalised conclusions; however discussion of emerging insights is worth consideration while further research is ongoing. Currently a longitudinal study is being undertaken in order to evaluate what long-term effects, if any, participation in the workshop had on the students. In addition to this, further instances of the workshop need to be held in order to investigate the educational value of the approach. The outcomes of this study have been influenced by many different factors from the design of the learning experience, the setting and the relationships, to name but a few. The nature and complexity of this research makes it difficult to evaluate the extent to which individual aspects had an impact on the outcomes of this study. For that reason the discussion of the findings focuses on the impact of the design workshop as a whole.

Preliminary findings that have emerged from the analysis of the study suggest that the experience had a positive impact on the students in terms of both personal development and the development of skills and competencies. The emerging insights show that the approach to learning in this study appeared to be effective in the development of the student's ability to work effectively as part of a team, to express their own opinions and to take other opinions onboard. Evidence of this can be found in the qualitative data from the surveys and focus groups. Positive comments from the students include:

- *"I learnt about team work and how to work in a team. I also learnt a lot about brainstorming and how it helps. I learnt that no idea is stupid and you should always think outside the box."*
- *"Group work is really helpful and brainstorming as well. Don't be afraid to try and don't be scared to say your ideas no matter how funny it is."*
- *"Learning in groups are (is) working well for me. I never really did that before."*
- *"I learned that I enjoy working in groups more than I thought."*
- *"When you're in a group its all about everybody's opinion."*

Findings also showed evidence of the development of the student's confidence on several levels, from confidence in their own ideas, confidence in expressing their opinion, confidence in giving presentations and confidence to talk to new people. Positive comments captured in the surveys and focus groups include:

- *"I can independently develop my own creative ideas and trust them, and I'm much more comfortable when talking to groups."*
- *"I'm more confident and capable of presenting my ideas to others."*
- *"I feel more confident in myself as a person."*
- *"Made me more open and trusting in other's as well as my opinion."*
- *"I am going to apply the same confidence I had for Hedge School for school too and I will be more expressive of my opinions too."*

The findings suggest that the workshop experience appears to have played a role in giving students confidence to pursue higher education in art or design. Analysis of the data gathered suggests that several of the students appear to have developed confidence in their creative ability and an interest in pursuing art and design at third-level. The findings are supported in the qualitative data in the surveys and focus groups. Responses included such statements:

- *"At first I thought … that what I wanted to do wasn't going to be good enough … but it kind made me more you know focused on what I wanted to do."*
- *"I think it made me like more like back me up more because I want to do graphic design and everyone was like complimenting me about that and it kind of like boosted me up and I want to do it more now."*
- *"It … encouraged me to continue with my interest in art."*
- *"I'd like to come here. I've more interest in design and stuff now."*
- *"I totally consider this place now I wouldn't have thought about it before."*

These initial findings suggest that an out-of-school design workshop has the potential to have a positive impact on students; however further research is necessary to investigate the long-term impact.

Building upon the work of the various school and community outreach programmes established within many third-level institutions around Ireland, this work makes a case for the value of this type of interaction between the second-level school and the third-level art and design college. Ongoing work aims to explore the learning outcomes of this particular study further.

REFERENCES

[1] OECD. *Innovating to Learn, Learning to Innovate*. 2008 (OECD, Paris).

[2] European Commission. Key Competencies for Lifelong Learning; European Reference Framework. 2007 (Office for Official Publications of the European Communities, Luxembourg).

[3] Ananiadou, K. And Claor, M. 21st Century Skills and Competences for New Millennium Learners in OECD Countries. In *OECD Working Papers*. No. 41. 2009 (OECD Publishing, Paris).

[4] NCCA. Towards Learning; An Overview of Senior Cycle Education. 2009 (National Council for Curriculum and Assessment, Dublin).

[5] NCCA. Towards A Framework for Junior Cycle. Innovation & Identity. 2011 (National Council for Curriculum and Assessment, Dublin).

[6] Benavides, F., Dumont, H. & Istance, D. The Search for Innovative Learning Environments. In *Innovating to Learn, Learning to Innovate*. 2008 (OECD Publishing, Paris).

[7] Royal College of Art. Design in general education. 1979 (Royal College of Art, London).

[8] Cross, A. Design and general education. *Design Studies*, *1*(4), 1980, pp.202–206.

[9] Cross, N. Designerly ways of knowing. *Design Studies*, 3(4), 1982, pp.221–227.

[10] Design Council. Design Education at Secondary Level. 1980 (Design Council, London).

[11] Archer, B., Baynes, K., & Roberts, P. A Framework for Design and Design Education: a reader containing key papers from the 1970s and 80s. 2005 (DATA, Loughborough).

[12] Baynes, K., & Roberts, P. Basic Issues Revisited: Agenda for the Future. In *A Framework for Design and Design Education: a reader containing key papers from the 1970s and 80s*. 2005 (DATA, Loughborough).

[13] Mc Carthy, I. (1995) Proceedings of Design Education for Schools Symposium. 1995 (National College of Art and Design, Dublin).

[14] Mc Carthy, I., Granville, G. Design in Education: A Discussion Paper. 1997 (National College of Art and Design / National Council for Curriculum and Assessment, Dublin).

[15] Goldman, S., Carroll, M., & Royalty, A. Destination, imagination & the fires within: design thinking in a middle school classroom. In *Proceedings of the seventh ACM conference on Creativity and cognition*. 2009, pp. 371-372. (ACM, USA).