

WHEEL OF DESIGN – REFLECTIVE ALIGNMENT OF DESIGN SKILLS WITH ASPIRATIONS

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ABSTRACT

The increased focus on modularisation within the western Higher Education curriculum is criticised by some as leading to a fragmentation of the learning process. This fragmentation can lead to difficulties in ensuring that students become reflective practitioners, as seeing the 'whole picture' - or the joins and interdependencies between modules - can be difficult, particularly for L1 students. In turn, such a lack of reflection can lead to students failing to develop into holistic and critically reflective professionals upon entry to their professional community of practice.

This paper outlines the results of a study into the use of a newly developed Wheel of Design (WoD) aimed at addressing Industrial Design Students' need to be reflective practitioners in the midst of the HE modular curriculum at Coventry University.

The paper concludes that the WoD process does have potential in addressing the modularisation of the HE curriculum, in that it gives students the chance to reflectively develop a holistic view of their learning process and also link this to their career aspirations. Meanwhile, for tutors, the WoD tool gives the opportunity to draw out insights about students' personal development and professional goals that otherwise might have been overlooked and tailor the curriculum accordingly.

Overall, the WoD has the potential to align student creativity with reflective practice and thus successfully equip them for their professional community of practice.

Keywords: Industrial design, threshold concepts, transformative learning, reflection

1 INTRODUCTION AND METHODOLOGY

Over the past 20 years the focus on the modularisation of the western Higher Education curriculum (normally centred on study from the age of 18 to 21) has increased [1]. This involves an accumulative credit framework attached to individual modules to result in a final degree classification. The framework is seen as appealing in terms of rationalising the curriculum 'so that a single set of lectures [are taught] in a subject common to students in a variety of disciplines' [1]. This adds flexibility and emphasizes 'managerialist thinking' in that these standard, self-contained units are 'administratively neat' and therefore easier to measure in terms of success or failure [1]. The advantages of the approach for the student include the opportunity for a broader and more individually defined course of study centred on building skills and capabilities and providing the opportunity to cross-disciplines and broaden professional opportunities. Critics of the modular system point out that students may suffer from fragmentation of the learning process [2] [3], with some forgetting the learning from the previous module as they move onto the next [4]. There is also the worry that students need to be 'up to speed' quickly in order to progress through the module as short time spans often leave little time for 'students to reach their full potential [4] [5]. As such, students are in danger of a surface approach to learning and may have difficulty relating 'theory to practice' later in their course. [4]

In recent years the Department of Industrial Design (ID) at Coventry University (which includes Automotive, Transport, Boat, Product and Interior Design) has dealt with some of these challenges at undergraduate level by introducing more holistic strategies and larger module spaces that are centred around 'gateways' of learning. These allow students to effectively publish their work in a safe critical space and see their progress against personal thresholds of learning [6]. However, there is still a challenge for students in terms of the recognition of the interdependency of their modules and how these aim to enhance their capabilities, strengths and weaknesses against their career aspirations.

The researchers who teach on the four year MDes and BA (Hons) Industrial Design courses at Coventry University believe that at the core of this recognition is reflective thinking, seen as a technique that helps shape an individual's values and beliefs [7] [8]. But reflective thinking can often be challenging. This has especially been noted within the early stages of the predominantly male, visually-minded student cohorts on the Automotive and Transport Design courses which reside within the ID department. The students often arrive with one strong desire - to be a 'leading car stylist' - and do not appreciate the broader range of professional opportunities available. These include the design of boats, trucks, buses, bikes and service vehicles; sub-sets of these e.g. trim and garnish design, interiors, exteriors, small parts, and different roles in the design process, such as 3D model making or concept design. Getting the students to reflect on these opportunities in written form – for example, in reflective journal/sketchbooks - has previously proved of limited success.

The challenge in the context of industrial design education is that many pedagogic theories propose writing as a means of reflection - ranging from preparing action plans, writing journals and blogs to building narratives. With students who are reluctant to put pen to paper, writing can be a frequent barrier. Researchers are increasingly exploring the nature of reflection and action-research as a space to engage creative and critical thinking and a spirit of collaboration which might help promote deeper self-awareness within students who already engage with the complexities of the creative process [9]. They believe that this interplay will help students to shape their aspirations and learning pathways and feel that this is at the heart of a transformative approach [10] where personal horizons are developed by highlighting active pathways from skill to profession, fundamental to the field of design learning.

The intention is therefore, to explore ways of helping students to recognise through reflection the learning pathways that underpin their aspirations and this paper proposes a step towards this. Two tutors, including a Principal Lecturer of industrial design with a specialism in design research and pedagogy, and an automotive designer who has recently entered education as a lecturer from industry have been motivated to find ways to build upon such reflective approaches. They began this process by introducing the 'Wheel of Design' (WoD) developed to help students begin to align with their desired professional community of practice [11] and mitigate the perceived 'nuisance' of traditional reflective techniques that appear to get in the way of 'proper creativity', the overall aim is to produce critically-minded, reflective design practitioners who are equipped to enter their professional community of practice.

2 METHODOLOGY

The WoD exercise involves a 'game board' (Fig. 1) where students are invited to position markers against categories which relate to key aspirations, skill and capability strengths and areas for improvement. Each student takes this activity in turn. After the markers are positioned, each student (in turn) is invited to discuss their feelings, ambitions and potential anxieties. The purpose is to open a reflective discourse to help students to make connections between skill development and their potential career focus. All students were invited to join the conversation resulting in a collaborative space for discussion.

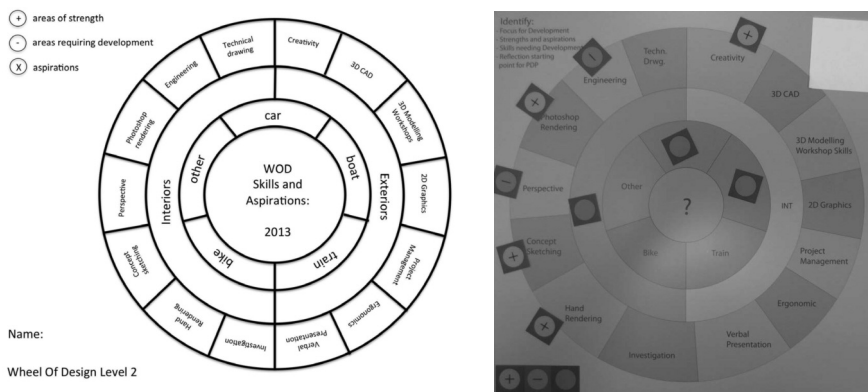


Figure 1. Example WOD with markers

This visually-focused tool, aimed at creating a 'reflective dialogue space' was first trialled with a cohort of seventy Level 1 (L1) students during the 2012 academic year. After the initial trial, the tutors reflected that the tool opened up a strong space for discourse around a student's personal development and aligned strongly with the existing pastoral tutorial support procedure (APT) implemented by the University (4 structured group meetings per year).

The (now) Level 2 (L2) students have repeated the process during the 2013 academic year. In parallel the new L1 cohort have also been given the chance to experience and review the tool in relation to their current studies.

Focus groups were conducted - one with seven L2 students (who were part of the pilot and subsequent iteration), and one with the eight from the current L1 cohort. The goal was to 'look back' on the use of the tool with the L2 to consider whether the WoD should be embedded within the early stages of the curriculum, and also with the L1 students to reinforce understanding of the student experience using the WoD.

The focus groups involved conducting the WoD exercise with both groups and incorporated a simple hand-out with some core questions to gain insight about whether it promoted self-evaluative thinking and reflection. The tutor facilitated the discussions with both groups, asking students to say a few words about where they had positioned the markers on the board and why. Both groups were also invited to respond openly about what they liked and disliked about the WOD tool with opportunity to make recommendations.

3 THE STUDENT RESPONSE

3.1 Level 2 Focus Group

The seven L2 students had the opportunity to identify key shifts in skills development/aspiration, their confidence, self-motivated learning and also provide an opinion on the effectiveness of the tool itself.

It appeared that most students did not strongly change their aspirations in the first year of study but recognised a stronger focus towards their professional interest. However one female student had identified a complete shift in focus from design to project management. Another highlighted that a better awareness of 'industry' provided him with a more knowledgeable and realistic basis for focusing his aspirations, and most students felt that they had developed a stronger link between their skills and aspirations. The main factors recognised by the students as influencing this link included practising drawing, sketching and presentation skills, increased contact with industry and learning to work with critical advice and more specific projects, as well as the opportunity to bring personal interests into their design activity. One student highlighted the importance of pushing himself outside of his comfort zone as well as trying new techniques.

The students also recognised digital representation and modelling skills as being a key shift. This is to be expected as the curriculum is designed to focus on practical skill in L1 and build, amongst other core skills, digital abilities in L2. Other students saw positive shifts in their time management and investigation skills; their understanding of who they were designing for; and, an increased critical depth of work and improved presentation techniques. These indicate a greater maturity in thinking about capabilities and creative engagement beyond basic skills. It was noted that previously, the students were concerned primarily with singular skills and did not see the 'whole picture' of their skills and capabilities.

All the students felt they had gained more confidence in relation to their aspirations compared to the previous year. They felt that this was due to having time to think more deeply about what they wanted to do and how they might achieve it, as well as feedback and tutor recognition of their work even though (as one student put it) there was much room for improvement. Students especially valued 'meetings' with tutors early in their second year and significantly, the interaction they had had with L3 and 4 (finalists), who as one student stated 'played a crucial role in increasing my feelings and my confidence'.

The majority of students were also able to provide examples of how they had self-initiated skills development outside of formal tuition. Mostly students focused effort on sketching skills, exploring 3D digital modelling via free online tutorials, visiting student-led workshops and building rapport with older students and graduates. A couple of students focused on improving their time management and organisation skills. This self-initiation appears to show a heightened recognition of the value of enhancing skills and building professional awareness beyond the studio setting.

The students didn't necessarily draw up an action plan in a formal sense after the original WoD experience, but they internally developed foci for development. As previously mentioned, Automotive and Transport Design students - predominantly male and visually focused - can often struggle with producing 'reflective' discourse on paper and don't often 'value' the written action plan. However, one student reflected upon the advantage of the WoD in making him think about actions to be taken. Another stated that 'seeing the WoD and seeing all the skills I needed to develop [meant] I had a clearer idea where I needed to improve'. For another the WoD helped him to form a 'picture': 'The WoD helped me to have a complete picture regarding my skills and after that I could develop an action plan'. Other students stated that they had given time to thinking about where to improve and only one said they did not set any personal goals for development.

3.2 Level 1 Focus group

This session focused on how these eight students – who had been studying less than 6 months - saw their alignment with their career aspirations at this early stage of study and where they might, after experiencing the WoD, focus their personal development efforts. They were asked whether they had a clearer vision of what needs to be done to enhance, focus or balance their skills and whether they felt they could now put together a personal action plan.

Before undertaking the WoD exercise, all but one student felt quite confident that they had the basic skills needed to align with their career aspirations, but most also expressed some foci for building upon their skills. After completing the WoD exercise, the students then suggested a broad range of areas for development, and were concerned about skills that were very new to them, such as engineering. The core priority and expected trend (also observed when doing the exercise last year) indicated that drawing skills were the main priority to the students. This was a significant difference to the L2 students who were more concerned with portfolio building, industry and professional awareness.

One student identified that this exercise actually helped him to visualise his interests and skills, highlighting points he had not previously considered. Some were highly skills focused throughout and others began to indicate a desire to consider things that were unfamiliar to them, appreciating that this would involve them engaging in self-development outside the taught environment. Many students began to suggest active pathways of learning centred on 'putting in plenty of practice', others highlighted the value of sharing skills, conversation and opening up to new areas of practical and/or design experience: yet others began to identify the need to look at niche areas and be open to new techniques and design tools.

4 REFLECTIONS ON THE USE OF THE WOD

Overall feedback was positive regarding the experience of using the WoD as part of the APT process. There were indications that the (now L2) students who participated in the 1st and 2nd iterations of the WoD process were demonstrating an enhanced focus on the 'bigger picture'. Specifically they were more industry-aware and could relate this awareness to the need to broaden their skill base, by moving outside their comfort zones and entering into more self-directed study. For the L1 students - who initially considered that they possessed the basic skills needed for their career aspirations - after completing the WoD they also saw the need to consider a much broader level of skills, and to be open to self-directed study and new experiences.

Both sets of students enjoyed hearing other people's opinions during the WoD sessions and being able to relate these to their own experiences; they were also not overly concerned with speaking in front of others. The visual nature of the tool seemed effective in this area, engaging students positively with discussion and providing useful prompts for opening discussion. Reflecting on this enhanced communication, one of the tutors involved in developing and implementing the pilot, observed that during previous APT sessions (without the WoD), tutors had to prompt discourse and were met with a reluctance and hesitation by the students to engage openly. In fact, students seemed quite suspicious of tutor motives. This may relate to the recommended format of the APT which involves completing written responses to questions prior to tutor discussion. In this, the questions are perhaps more aligned to students who are engaging with exam-based written subjects, such as science and engineering. However, industrial design teaching is studio and coursework-based with much closer staff contact with students, and so the APT system can be confusing for them even with explanation.

There is some potential fine-tuning needed of the WoD, as some of the categories proved irrelevant for L1 students and others were more appropriate for L2 students. With refinement, it is possible to contemplate using the device throughout their studies, mapping changing aspirations influenced by their expanding subject knowledge and experience. This could be a good indicator not only to identify the maturing of students, but also potentially to adjust taught content and its management.

5 CONCLUSION

The WoD process has potential in addressing the modularisation of the HE curriculum, in that it gives the students the chance to incorporate a more holistic view of the 'joins' between the modules that they encounter during their years of study, and thus mitigate somewhat any fragmentation of the learning process.

It also has the potential to address ID students' reluctance to keep a written reflective journal, indicated by feedback that they were now reflecting on the 'bigger picture' - in particular in relation to how to connect their skills and capabilities to their career aspirations through greater industry awareness and what is needed by their professional community of practice.

For the tutors, the WoD tool gave them the opportunity to draw out insights about students' personal development and professional goals that otherwise might have been overlooked and tailor the curriculum accordingly. It also gave the tutors the opportunity to engage in a discourse with the students - which hitherto had been problematic - whilst at the same time offering the students the opportunity to exchange views about their strengths, areas that needed attention and perspectives on what they wanted to do.

A number of recommendations were drawn out of this study, including refining the categories and utilising the WoD at each level of the course, but keeping the WoD board very similar at each stage so students can track personal progress and always see the 'whole skills and capabilities' picture. Students could then target themselves in a more informed way at latter stages of study to ensure they had the right skills/knowledge make up. It was strongly felt that industry awareness and wider design knowledge should be incorporated within the outer circles of the WoD. Transportation as a general category was also seen as significant. Suggestions made by an involved tutor included recommending that this technique might be more universally adopted to visualise the course as a whole and its foci at different levels of study, as well as adding an extra 'ring' to the wheel to subdivide core careers into detailed sub-career paths.

The WoD is therefore felt to support this transformative learning experience and allow students to reflectively frame learning pathways towards their aspirations. It is now the researchers' intention to make observations based on a full cohort implementation of the WoD during the spring of 2013, and then refine the tool for L2 students for use later in the year and thus examine its other opportunities and potential applications, for example, mapping changes in capabilities and aspirations over different levels of study. One idea for further development is to build the WoD as an online tool for students that could be reviewed regularly. This might even have potential to be linked in with an assessment profile. Externally this could be adapted as an online tool for helping potential applicants to develop a deeper awareness of Coventry's ID courses in relation to their aspirations and to help them prepare portfolios for application. Fundamentally, it is the intention of the tutors who devised the WoD to more deeply explore the mechanisms of supporting reflection through visualisation techniques and especially to underpin the transformative learning experience typical of industrial design students.

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