MOTIVATING STUDENTS IN RESEARCH ORIENTED COURSES IN INDUSTRIAL DESIGN

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ABSTRACT

The present paper explores and reflects on the key issues impacting the learning experiences of students, together with the author's own teaching and learning experiences, using Brookfield's four critical reflective lenses (Brookfield, 1998). The paper explores insights from the theoretical literature on the key frameworks and theories of learning in higher education, focused on the field of Industrial Design, from research into students' learning experiences, and colleagues' teaching experiences. The paper presents a review of selected theoretical literature on student Learning experience and the attributes of being a good lecturer. Deep and surface learning approaches are discussed, as well as the student-centered learning approach in design studios. Various authors' descriptions of the good lecturer are drawn and linked with the learning experience and the main ways to motivate students, in an attempt to define the role of the inspiring lecturer. The paper also presents insights from the experiences of design teaching colleagues. Three case stories having components of involving the students into the learning experience by either having them perform an activity, think, talk, design and draw will be examined and contrasted to instances where negative learning experiences have been observed. Finally, the results of a short survey on student's learning experiences in Project Research and Graduate Project courses are also discussed.

Keywords: teaching and learning, design

1   BACKGROUND

1.1   The Learning experience

In the past, design education has been focused on a curriculum that was structured around basic subjects, such as: basic design, design studio, design history, drawing, mathematics, physics, marketing, and economics. The student-centered learning approach in design studios, on the other hand, is a more interdisciplinary and interactive approach focusing on the goals, tasks, skills, expectations and interests of the student [1]. This approach however is not new, and has been developing since the 17th century. It deals with the way individual students can construct knowledge, in particular through the visual senses, and learn through designing. Student-centered learning includes continuous learning through socialization, the evolving culture of the environment, and the rapid changes in technology [1].

Deep and surface learning approaches, as a reaction to the teaching environment, have been defined only in recent years [2]. Learning is said to happen only if students can engage in a constructive activity, and embrace a deep approach to learning, as opposed

to a surface approach. Biggs states that this engagement can be initiated by conveying clear objectives, targets and direction, providing motivation, building confidence, installing comfort, and finally by facilitating a good dialogue between staff and students and between students themselves.

The characteristics of courses that predispose students toward a surface approach to learning are identified as follows by Rhem (1995): excessive amount of material in the curriculum; relatively high class contact hours; excessive amount of course material; lack of opportunity to pursue subjects in depth; lack of choice over subjects; and lack of choice over the method of study; and on top of it, a threatening and anxiety provoking assessment system [3].

On the other hand, Rhem (1995) identifies the following strategies in order to help deep approaches to learning:

- Creating a motivational context: learning happens best with things one feels he/she needs to know, with a sense of ownership in the process.
- Fostering learner activity and 'learning by doing' by connecting activity with abstract concepts.
- Encouraging interaction with peers: the lecturer is not the only source of instruction or inspiration.
- Connecting new concepts with students' prior experience and existing knowledge.

Design teaching has always been concerned with the fact that students learn best when they are involved in solving a problem and motivated to seek out new knowledge and skills for it. Another important fact referring back to Rhem's (1995) sense of ownership in learning, is that students have a preference to explore and construct knowledge themselves rather than receive it through a static lecture and reading textbooks [1].

Among the most important things a lecturer can do to enhance the learning experience to his/her students, Brookfield (1990) points out the importance of challenging them to achieve critical reflection, with the appropriate teaching methods, taking into account the varying learning levels and styles [4].

1.2   The good lecturer

Traditional characteristics of good teaching, such as commitment, caring, passion for the discipline, and command of instructional materials and techniques are considered still necessary but insufficient qualities [5].

Brookfield (1998) defines the good lecturer as someone who is critically reflective on his/her own teaching, who focuses on helping students to learn, and who teaches an understanding of how the students are experiencing their own learning [6]. Furthermore, good lecturers are the ones who can empower their students to take control over their own learning and who can provide clear feedback to the students' efforts without threatening their egos [7]. The two main ways to enhance the motivation to learn given by Csikszentmihalyi (2002) are:

- To provide a clear communication of the advantages and disadvantages expected from the course. (I have experienced this during 'real life' studio projects and student design competition projects given in design studios).
- To make students aware of how much fun learning can be.

Regarding the second way, Csikszentmihalyi (2002) points out that students are not incapable of learning but they rather do not wish to learn, having serious motivational problems refraining them to invest energy in learning. Csikszentmihalyi (2002) claims that, if educators were devoting more energy on stimulating the students' enjoyment of

learning rather than spending it in conveying information, they could achieve much better results. Jerram (2002) shares the same point of view, and considers motivation as a key issue, focusing on doing this with a vocational approach, emphasizing on future employment possibilities and requirements [8].

From the student's point of view, Knowles (2002) gives a long list of required student skills for life long self-directed learning. These skills are related to the ability of students to do the following tasks [9]:

1. develop and nourish their curiosity
2. perceive themselves objectively and accept feedback and criticism about their own performance non-defensively
3. diagnose their own learning needs
4. formulate learning objectives in terms that describe performance outcomes
5. identify human, material, and experiential resources for accomplishing a wide range of learning objectives
6. design a plan of strategies for making use of appropriate learning resources effectively
7. carry out a learning plan systematically and sequentially
8. collect evidence of the accomplishment of learning objectives and have it validated through performance

Students can obviously develop these skills by themselves but need serious motivation in order to do so. In the two specific courses undergraduate *Project Research* and postgraduate *Graduate* Research that I will describe later in the paper, the lecturer plays a crucial role as the optimum motivating force. How can this role be achieved? In other words, how can I become such a motivating or inspiring person to maximize the learning outcomes of my students? This has been the question at the back of my mind while I was reading the related literature.

The position of lecturers, as defined by Jupp and Bentley (2001: 34), lies at the heart of the learning experience [10]. They are seen as the entity connecting students to ideas, facilitating understanding and providing expert guidance. One of the many aspects of an inspiring lecturer is described as being aware of the variety of backgrounds and diversity in learning levels [11] [12]. This aspect involves an inclusive approach, good communication skills, clear and good guidance on subject details, clear cut action against discrimination, and being encouraging towards student involvement and participation in class. Shaddock (1996) divides three teaching categories of such a learning environment as follow: 1. providing a comfortable learning environment; 2. explaining expectations clearly; and 3. providing a culturally sensitive content with more equitable assessment procedures.

Recognizing the emotional nature of learning is another important aspect of good teaching, as mentioned by Brookfield (1990). He recommends to pay attention to positive and negative emotions occurring during the learning and teaching process, and to encourage students to criticize issues in class [6].

In relation to negative emotions, Brookfield (1990) talks about the *impostor syndrome*, which is something that has to be dealt with very early on, in order to create a trustful and responsive teaching environment. Among the ways of dealing with this widespread syndrome, he recommends regular affirmation of the students' sense of self worth by giving them timely and appropriate recognition, and positive criticism; self confession of feelings of incompetence or failure as a lecturer; and encouragement to discuss similar issue with their class mates to realize that they are not alone. This is a

particularly relevant area when considering diversity and how students are feeling when they come to a class for the first time.

2 EXPERIENCES OF COLLEAGUES

In many instances, I observed my colleagues while they were teaching and tried to benefit from that. Amongst the positive learning experiences I have been able to identify, the following three cases remain in my memory:

In one design studio, in front of 50 students, a senior lecturer acted the role of a 5 years old child, alone in the kitchen, trying to scope ice cream from the 5 Lt ice cream bucket. The play was fun and instructive. Students could visualize the scene and understand the ergonomic issues related to the design of an ice scope, while they were having fun. The next thing this lecturer did was to invite volunteering students to scope some real ice cream with a scope for a certain period of time (some students even got to eat the ice cream). The students were then questioned about the experience and they all reported that it was a tiring task if it had to be repetitive. This in return opened a debate on the ergonomic issues involved in the design of a hand operated ice scope.

This approach was just great and the students enjoyed themselves, listened and watched the activities and were also part of it. I still feel that, even though such an approach is good and motivating for the students, it requires some "star quality" from the lecturer and I personally could not see myself performing such a play, even though I do perform shorter things related to the use of a product, such as "trying to press a button that is located under a product, on the ground level" just to help the students visualize the interaction with product they are trying to design.

Inviting students to experience it for themselves and report back on it to their peers is definitely the approach that works. This approach is somehow difficult for *Project Research* and *Graduate Project* courses because each student is working on a separate topic. The common ground is the research and design processes. Students could share, at regular intervals, their own experiences about each step of these processes.

The second case story, in another class with a lot less number of students, a senior lecturer was to talk about "user centered design". He first had the students to design "a package for a peach to be posted by mail". Then he asked them to share the main important things they considered while designing it. This was a great way to grab their attention, get them involve in the lecture and then share some relevant information with them. The students seemed to engage and benefit from that lecture. Grabbing students' attention right at the beginning of the lecture is such a powerful approach.

The third case story, which occurred more than a decade ago in Turkey, while I was a research assistant helping in a design studio class, was related to experiencing and observing daily life things. A senior lecturer performed in front of the design studio class the task of preparing a watermelon for consumption. He sliced the watermelon, pitted the stones out with a knife and sliced it into triangular shapes in a serving bowl. Students were asked to watch carefully and told that they were going to do a related activity right after. The activity required them to draw a storyboard of pictograms of the story "how to prepare water melon in a serving bowl". That was again a great learning experience. Even if almost none of the students noticed the geometry in the position of the seeds, they all got to eat the water melon, and they also learned that, no matter how hard they look, there will always be things they won't see or notice and that simple things are difficult to express visually, without using words. Everyone was involved from the start till the end. I am sure that most of the students still remember this lecture each time they eat watermelon.

All of the above stories have components of actively involving the students into the learning experience by either having them perform an activity, think, talk, design and/or draw. They all have the fun component, and in two of them, the lecturer is performing something fun to watch and to interact with. Somehow, these activities remain in the memory whereas lecture notes and speeches do not.

In many other instances, I have been observing some negative learning experiences too. Some of such experiences were related to cases where too much information was conveyed to the students for very long periods of times, letting them overwhelmed and tired to listen. Especially if this was happening in the dark, as is the case for a PowerPoint presentation. No matter how interesting the slides were, the students were falling asleep and not getting anything they could take with them from the lecture. Other negative learning experiences I saw occurred when the lecturer was asking too many questions at once, and not giving the students time to answer them, no matter how interesting or relevant were the questions. In one particular extreme case, the lecturer was not connecting at all with the students and even turning his back while talking. There must obviously be a complete involvement from the lecturer point of view.

3   MY STUDENTS' EYES

In order to collect and analyse evidence on how my students' experience learning, I did a short survey in the two different core courses mentioned previously. The first one was 4th year undergraduate *Project Research* course with 56 students and the second one was postgraduate *Graduate Research* course with 21 students. In the course *Project Research*, students are expected to establish a carefully researched and clearly documented basis for the development of an industrial design project of their choice. The outcome of *Project Research* is a report of professional standard documenting the research activities undertaken, specifying and justifying the relevant design criteria for the design project, that will be carried on in a following session, in another course.

The *Graduate Project* course is a study within the practice and research areas of industrial design, proposed by the student in consultation with a supervisor. The *Graduate Project* aims to demonstrate that the student has absorbed and integrated the material from preparatory subjects, showing a good understanding of the industrial design profession at a postgraduate level. The student has to firstly establish the current state-of-the-art in the particular design area, and to identify where there is an unmet need or potential in product design, design process or design theory. The outcome of *Graduate Project* is a thesis of professional standard, which documents at a postgraduate level the same kind of information as in Project Research reports.

The three same questions were asked in both surveys:

What were the positive aspects of the course?

What were the negative aspects of the course?

Recommendations to improve the course

For the first question, amongst the things that contributed positively to the learning experience of my students the following were pointed out:

- Length of lectures. Short lecture times were appreciated;
- Organization of the course: a well organized course contributed positively to their learning experience;
- Having a chance to do in-depth research under the supervision of an assigned supervisor, being able to work independently under the guidance of a supervisor;

- Having a program with deadlines and intermediate achievements that must be met.
- For the second question, amongst the things that contributed negatively to the learning experience of students the following were pointed out:
- Timing for student presentation: they complained from not having enough time assigned to them for their presentations to the class and to lecturers;
- Students wanted more justifiable weighting for the different assignments;
- Need to know the level at which the "bar is set" in order to understand what is expected from them.
- For the third question, students gave the following list of things they considered important to improve both courses:
- Need for more "hands-on" projects and model making (this came as a surprise due to the research content of both courses but is relevant as making mock-ups and models are also part of research methodologies for design research);
- Need for individual supervision time, together with the group supervision sessions (both classes had group supervision only due to the large numbers of students);
- Need to meet with different supervisors to get different points of views;
- More class presentations to their peers.

4   ISSUES THAT IMPACT UPON STUDENT LEARNING

In the light of the literature search and the answers to my class survey, I can reflect back on both courses and look at the parts that need improvement. The students in both of my courses were aware of what was good for their own learning experience and they could articulate it in the survey. The survey results showed me the need to focus more on continuous improvement through evaluation and review sessions. There is an obvious need in making more time for the students to express themselves with class presentations for them to get appropriate and ongoing feedback on their performance. These presentations in the past have been limited due to time and staff constrains, which will be a continuing pattern. Both courses heavily rely on part time teaching staff. I will have to find other ways of letting the students express themselves and get feedback. Students will take notice of progressive feedback because they can act on it and improve their performance [13]. Feedback given at the end of a project will never be as good a learning experience as the one received progressively through the session, in various assessment tasks. In both courses, two presentation times are scheduled around week 7 and week 14. It seems that one more presentation time could be squeezed in. During these presentations, students have always had 10 minutes to present and 5 minutes for questions. This was due to their numbers and the limited number of part time staff available. The answers of students to the survey show that they are not happy with short presentation times and I will need to reconsider the presentation schedules and formats for future review sessions.

I will also have to pay more attention to the weighting of the various assignments. In the past years, I have always assumed that Post Graduate students are adults that do not need to be constantly awarded with marks to help them get through the session (as I usually do for undergraduate students). The answers to the survey and my own experience as a learner showed me that this is not the way to do and that a constant list of reminders and incentives in the form of a marks, appreciation or feedback should be carefully planned all through the session to keep the level of interest and feed the learning experience. This view is supported by The University of Queensland Report of

the Task Force on Assessment Policies and Practices [13] where it is stated that students learning and interest level is determined by the nature of summative assessment they expect to receive. The hardest part for me still seems to be finding ways to stimulate the students' enjoyment of learning, which I believe to be the most important aspect of teaching and of being a good lecturer, as stated by Csikszentmihalyi (2002).

5   ON MY OWN EXPERIENCE AS A LEARNER AND LECTURER

5.1   On the learner side

During the many short courses I have attended in recent years, I found it difficult to get back to work (such as reading the assigned papers and writing essays), even if I enjoyed the lectures and workshops. My motivation level is generally good in class and tends to disappear when I am back home, as a result of the cooling off syndrome, especially after a few weeks have passed. I can feel that this must be the same for my students too. Experiencing learning again for myself made me more realistic towards my expectations from the students. I have lowered my expectations and learned to be more tolerant and have more compassion. When I was an undergraduate student myself, a while ago, I remember discussing with my peers that some of our lecturers had forgotten they too were students once. My feeling is that one other important factor is to have students starting early in whatever they are doing, and keeping them informed and busy with bits of things that will come together at a later date to form a whole.

5.2   On the teaching side

The best performance from my students came when they had to do hands-on tasks in class, in one or two hour time slots. One was to create designer Christmas decorations in one hour, with white paper and scissors (no glue). The second one was to tell a little story by using a sequence of images without the help of words. The stories were about how to cook muffins, how to prepare coffee, how to hang a picture on the wall and how to plant a pot plant in the garden. In both cases, the students asked for more similar class assignments. The enjoyment they experienced was visible all through the studio hours. Fitting the curriculum in that format, especially for research-oriented courses, is somehow difficult. Not all the teaching content can be translated into short hands-on class assignments. This has encouraged me to try more of that kind of class assignments, to keep student's enthusiasm level high. Furthermore, the types of class assignments mentioned above are difficult to adjust to be applied in a course with a high research component.

In Project Design Studios classes, the best performance came when students were briefed with 'real life' projects linked with the industry or in the form of international design competitions. Such projects have given students an important experience in the publication and commercialization of their design work. The industry partner gave each project a sense of commercial reality and relevance that is often hard to capture with artificially generated projects. Students gained motivation, skills and knowledge in business, time, financial and design management, as well as developed social and entrepreneurial skills. They also learned to hang on to the process despite the many challenges. For design competitions, the potential of winning a prize in an international or national competition works as a motivation enhancer in students' involvement in design studios [14].

An example of similar practice in a completely different course I encountered during my literature search was Lausen's (2001) 'Résumé as Experience Map' course, a pilot

course that integrates résumé design into the curriculum not as a simple writing exercise, but as a learning agenda that provides in-depth theoretical study and that challenges design students' creativity [15]. The learning experiences in designing and writing résumé have proven to be very similar to the ones experienced in a real life project as both are directly related to the professional future and job opportunities.

Jupp and Bentley (2001) are reinforcing the importance of real life projects [10]. They are pointing out that students are not offered enough incentives to transfer their skills across disciplines and contexts or solve real problems within disciplines. Real life projects are believed to develop students' understanding in ways that they could apply in the world beyond class exams. Jupp and Bentley also indicate that the simple possession of knowledge has limited value in itself, without the ability to organize, structure, and use knowledge and information to solve problems.

Another positive teaching/learning experience I remember was when I had to talk to a group of 15 students about the profession of industrial design. I brought with me six different types of scissors (a retractable one, a garden one, a sewing one, a children zigzag craft one, etc.) and asked them to comment on each one of them, trying to answer the question "why are they different?" The interest level was very good and they all had a say, based on their own experience of things. This active learning method of having students talk about certain objects or concepts they can relate to has been a useful approach that I try to regularly implement in design studio teaching but still have difficulties in implementing in *Project Research* or *Graduate Project* courses.

6   CONCLUSION

Reflecting back on both *Project Research* and *Graduate Project* courses, in the light of the literature search and the answers to the class surveys, it appears that the best learning experience occurs when students are involved in the learning process with a sense of ownership and control. This requires lecturers to challenge students to achieve critical reflection and to perceive themselves objectively, as well as to cultivate a non-defensive acceptance of feedback and criticism about their own performance.

On the teaching and learning experience in design related courses, a couple of main points can be highlighted as follows. Successful lecturers act as links to knowledge and ideas, facilitate understanding and provide expert guidance. They are aware of the diversity in backgrounds and in learning levels. Above all, they are able to provide a comfortable learning environment with equitable assessment procedures.

REFERENCES

[1]   Branham R., Back to the Future: Student-centered Learning, Interaction and Constructionism. *IDSA Design Education Conference Proceedings*. Chicago, 1995.

[2]   Biggs J., *Teaching for Quality Learning at University*, Buckingham SRHE & Open University Press, 1999.

[3]   Rhem J. Deep/Surface Approaches To Learning: An Introduction, *The National Teaching & Learning Forum*, Vol. 5, N. 1, Arizona, James Rhem & Associates, Inc. 1995, p.4.

[4]   Brookfield S.D., On the certainty of public shaming: working with students 'who just don't get it', in Rust, C. (Ed) *Improving student learning: Improving students as learners*, The Oxford Centre for Staff & Learning Development, Oxford, 1998, pp.17-31.

[5]   Garrison R. D. Andrews J., and Magnusson K., Approaches to teaching and learning in higher education. *New Currents* 2.1 January, 1995.

[6]   Brookfield S.D., *The Skillful Teacher: On Technique, Trust and Responsiveness in the Classroom*, San Francisco: Jossey-Bass, 1990.

[7]   Csikszentmihalyi M., Thoughts about education. In New Horizons for Learning. *Creating the future: Perspectives on Educational Change*, Dickinson D. (Eds), Seattle, 2002.

[8]   Jerram C., Applying adult education principles to university teaching. *HERDSA Conference Proceedings*, 2002, pp.369-375.

[9]   Knowles M., Lifelong learning: a dream. In *New Horizons for Learning. Creating the future: Perspectives on Educational Change*, Dickinson D. (Eds), Seattle, 2002.

[10] Jupp R. and Bentley T., What learning needs. The Challenge for a creative nation (part 3): Assessment. London: Design Council, 2001, p.25.

[11] Sinclair A. and Wilson B. V., *The Culture-Inclusive Classroom*, Parkville, University of Melbourne, 1999.

[12] Shaddock A., *Teaching for cultural diversity*, CELTS, University of Canberra, 1996.

[13] Teaching and learning in higher education series: Assessment for learning. *Report of the Task Force on Assessment Policies and Practices*. Brisbane: The University of Queensland, 1996.

[14] Park M., and Demirbilek O., Design Education with real life projects: LEXON®/FBE corporate gift experience, in De*signing Designers: Design for a local global world*. L. Collina, S. Giuliano (Eds). Milan: Litogi, 2002, pp.238-248.

[15] Lausen M., The Résumé as Experience Map. *2001 IDSA Design Education Conference Proceedings*. Chicago, University of Illinois, 2001.

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