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EVALUATING LEARNING DYNAMICS WITHIN A LANDSCAPE OF STUDENT CENTRED LEARNING

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ABSTRACT
One of the problems with any educational model is substantiating claims for effectiveness. Hence whilst a number of studies suggest that student centred learning (or aspects of it) is good practice, these tend towards multilevel model studies based on statistical measurement of outcomes which might be prone to bias. This study therefore aims to provide further evidence for the efficacy of student centred learning through a quantitative and non metricated analysis of the student learning experience.

The vehicle for the study is the final year Product Design degree course at the University of Brighton. The final year is significantly independent and self determined which includes traditional teaching methods as well as a number of student centred learning mechanisms providing a rich pedagogic landscape for analysis. The method of analysis is through student appraisal of their own learning process captured via 'learning logs', conceived originally as a method of making feedback more explicit but providing in the process a significant body of evidence showing how students are learning in this type of mixed educational environment.

This paper therefore provides a novel window into student learning and appraises learning logs as a method for pedagogic analysis. It identifies the issues that help to enable good practice in support of student centred approaches to learning and in particular emphasises the need to avoid complacency in the operation of this increasingly important educational philosophy.

Keywords: Student centred learning, pedagogy, learning logs

1   INTRODUCTION
As social and technological changes in our world become faster and more complex then knowledge, skills and understanding become ever more quickly redundant and we face what has been called the 'rapid obsolescence of knowledge' [1]. This problem is perhaps well understood in Product Design where it has long been recognised that graduates designers must remain connected to a variety of fast changing information as they pursue potentially diverse careers or varied project challenges.

Emerging education philosophies have therefore moved in a manner expounded originally by social theorists such as Carl Rogers and John Dewey. "It is no longer functional to define education as a process of transmitting what is known; it must now be defined as a lifelong process of enquiry" [2]. Pedagogic trends have hence moved away from traditional, tutor led and transmission model of learning described by McWilliam as the 'sage on the stage' towards a more facilitative, learner centred approach to teaching where the teacher becomes more the 'guide on the side' or 'meddler in the middle'.

The student centred approach is practiced within the BSc (Hons) Product Design degree programmes at the University of Brighton which aims to help learners acquire the skills of 'learning how to learn' and of 'self directed enquiry'. The underlying philosophy is that the learning process is a re-creative activity involving making new meaning. This is perhaps reduced and articulated through the Kolb Learning cycle (Figure 1) where the facets of feeling, watching, thinking and doing are integrated to provide an experience based student learning mechanism rather than the didactic 'talked at' model [3].
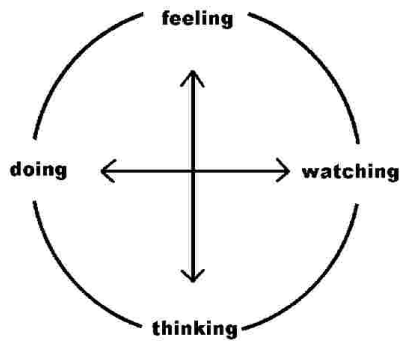
Figure 1. Kolb Learning Cycle

This philosophy has not always been entirely successful and there has been for example a tendency particularly for first year students to filter or circumvent new ideas and experiences through historic well known personal structures in order to 'avoid anxiety' or to 'conform' to peer group expectations, a process that merely reinforces existing constructs rather than developing new meaning [4]. This has resulted in a more structured first year programme moving more gradually towards a more independent and self determined final year [5].

This final year then employs traditional teaching methods such as lectures, tutorials and workshops, as well as a number of student centred learning mechanisms including Action Learning Sets, Common Interest Groups, tutor led teaching interventions, independent learning contracts, tutor and peer led critiques and interim assessments. In fact the lack of structure can be disconcerting for some final year students too and one example of this is the apparent inability of students to appreciate or recognise this feedback unless it is in a written format. In this case, students are now required to document their learning moments as they proceed through their studies through 'learning logs'.

Whilst the aim of the logs has been to make feedback more tangible the process has made more evident the student learning experience within the rich mix of final year pedagogies. It is these logs, and their interpretation into the Kolb learning cycle, that have then formed the basis for the study reported in this paper.

2   METHOD

Scientific rationalism can be problematic within educational studies where results can be influenced by uncontrollable causal inferences such as a group dynamic, changing student ability, or tutor style [6]. The team therefore adopted an interpretist, constructivist paradigm, described as an appropriate lens when the goal is 'understanding the meaning of social phenomena' such as learning, teaching and creativity [7]. In such studies, a multi-viewpoint, multi-disciplinary approach becomes a necessary attribute of the researcher and the research process (described by Denzin and Lincoln as 'bricoleur'). This approach was achieved by utilising four members of the Product Design course team with backgrounds in engineering, teaching, physics and product design amounting to approximately 40 years industrial design experience and over 50 years design education experience within Higher Education.

The first stage of the study interpreted the entries for 17 final year student learning logs. The period analysed was one semester from October 2011 to January 2012, and all entries were written in chronological format. The sample was predominantly from the 21 to 23 year old age range, but included extended to one 60 year old student. The gender breakdown was approximately one third female and two thirds male.

The learning log format was left open as it was felt that allowing students the freedom to record what they felt in a manner they felt most suitable would encourages student engagement. The majority used Microsoft Word with a small minority using on line blogging (Worpress). Example entries include these typical extracts (Figure 2):-

Student (four) :-

Wednesday 23rd November. Finishing Gantt Chart and organising the report. I thought I had finished everything for the project but I realised I hadn't put the Brief or Ethical forms into the report, which caused me to be stressed out during the morning. I also worked showing potential students, doing this on the submission day was quiet stressful but I had already finished everything I needed to do.

Student (sixteen) :-

Action	Learning lesson	Follow up	Learning Philosophy
Meetings and Interviews	Because of the information available to me through XXX it is important I use all communication methods available to me, to ensure I tap into that knowledge.	• Read up on interview techniques and communication methods. (ref 1) • Kept in contact through email to keep knowledge base.	• I have found through my meetings so far with XXX that I need to ensure I have all my questions ready. The meetings so far have been very helpful; however because of the time available to XXX and the amount of time he spends abroad, it is important I cover all points quickly and concisely.

Figure 2. Example learning log entries

Methods of interpretation included taxonomising entries into coherent groups (frequency of entries, nature of learning point, method of learning, range of methods, depth of detail), observing key trends, and relating entries specifically to the Kolb cycle (Figure 3):-

Student (eleven)

Do:	45cm More later	30%
Obs:	78cm More earlier	52%
Think:	19cm middle more	15%
Feel:	5cm sporadic	3%

Figure 3. Example analysis

Themes identified in the learning logs by the course team were then investigated further in a second stage through an informal, discussion based workshop with the students. The workshop included the students retrospective analysis and appraisal of their own learning logs using similar techniques but with specific reference to the Kolb learning model as described by the course team.

3   LEARNING LOG DATA

The varied log formats has made it difficult to précis the data into a coherent, summarised whole. The most apparent themes however were noted as:-
1. There was an average of approximately one learning entry per week across the sample. Students with historically higher grade averaging produced more detailed and regular learning log documentation at around one entry per day.
2. Many of the learning experiences noted related to major events rather than the minutia of everyday experiences.
3. There was a strong emphasis on personal development rather than on technical skills, facts, technique or design knowledge. Dweck's study with young learners found that their performance goals were focussed around 'winning positive judgement of… competence and avoiding negative ones' while their learning goals showed a will to develop 'new skills, master new tasks or understand new things' and found that most learners had both sets of goals in an approximate 50/50 ratio [9]. This study would re-define the ratio more towards 75/25. In general there were

distinct links between learning and emotion. Emotional states – and therefore perceived learning – was recorded to be enhanced by improved clarity, achievement and personal organisation. Such comments were also often self critical and negative. "I take easy options" or "I'm badly organised" rather than positive with 'eureka' moments. Sometimes the 'profound knowledge' actually seemed quite trite, naive or even misplaced. "I focussed too long in one area" might be right in the particular instance noted for example, but may not be true as a totemic shibboleth in other situations

4. The learning mechanisms were predominantly experiential. Only one person explicitly mentioned learning via lectures, and this was a simple summary of points delivered at the lecture rather than insightful knowledge. Instead, discussions with peers, external parties and tutors, and action learning sets all featured much more significantly.

5. The subsequent workshop supported the learning log analysis in placing emphasis on experiential, Kolb's 'doing', as a preferred learning mechanism. Student (twelve) typically for example, suggested learning mechanism as 55% 'doing', 22% feeling, 11% thinking and 11% observing. Student (eleven) suggested 30% 'doing', 52% 'observing', 15% 'thinking' and 5% 'feeling'. 'Thinking' (prompted by discussions) was also similarly supported, but the emphasis on emotions and 'feelings' within the logs was less apparent.

6. The workshop however identified more evidently than the logs that students were employing a full mix of Kolb style learning mechanisms.

7. In terms of teaching mechanisms the activities that afforded discussions were valued and these ranged from one to one conversations, to Action Learning Sets and to lectures with Q & A sessions. There was no consensus towards the least preferred teaching mechanisms but students noted how they adapted their own less favoured mechanisms to suit their own requirements, for example turning 'passive learning' such as lecturing into more active learning through note taking and plans for follow up research.

8. When least preferred mechanisms became unavoidable it was noted that these often proved to be highly effective. Student (eight) for example noted a keenness for lectures as her preferred learning method (as seen within her log entries) but noted that her key learning curves and behavioural changes had arisen from learning moments based on 'feeling'.

4 ANALYSIS

There were fewer entries than expected in the learning logs. It was at first considered that the brevity of entries may be related to student rationalisation of time in what is a busy year, or that the lack of small details may evidence a mismatch between what students think they need to know and what tutors want them to know. The following workshop however suggested that the issues were more related to the students' ability to conceptualise and articulate the learning processes. It may be significant that better performing students produced more detailed, more regular, and a wider array of learning moments although it isn't clear if they are more reflective because they are more insightful and/or dedicated, or that it is because they are more reflective that they appear to be better students. It was however evident that they savoured learning opportunities – provided they were not overloaded with them.

The propensity for experiential learning made in both logs and workshop, made tacit through discursive learning, supports the notion that inter-personal learning spaces are important partly because much effective learning takes place as a result of interactions between students themselves [9]. In that respect, the learning environment, time for discussion, and contextual learning all appeared to be critically important. There was hence some evidence that time for reflection, organisation of the course, and access to tutors was significant in the student perception of, and motivation towards, learning and supported therefore to some extend Dweck's assertion that the proclivity for learners to develop or reduce their goals was open to external influence.

It should however be observed that whilst 'experience' is noted to have predominated, the workshop did make it clearer that many learning mechanisms were actually at work. Students in fact felt these Kolb style categories were unrealistic and they felt they were employing all of the processes that Kolb describes but in a more complex, random and/or holistic fashion than the models suggest (Figure 4).
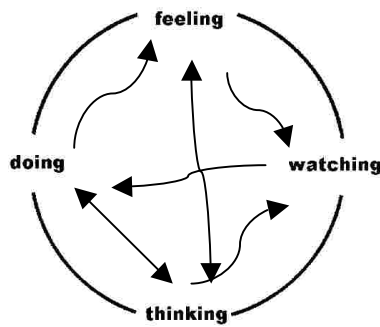
Figure 4. Modified Kolb Learning Cycle

They also stressed a belief that their learning processes were not consistent over the year. Students used different learning mechanisms amid the confusion and stress of the beginning of the year, but these mechanisms changed as they got into the pace and rhythm of the year. It was noted by student (eleven) for example, that he had started as an observer and thinker (referred to by Honey and Mumford as 'assimilation') but progressed to, and got more from, a doing and feeling mode ('accommodating').

In terms of teaching mechanisms, it was expected from learning style theory and from the logs that students would prefer different approaches to others, but the workshop suggested that students in fact valued all of the teaching mechanisms employed. Knowledge from taught lectures for example barely featured in the logs however the workshop identified that lectures were valued. They were cited as being particularly helpful in breaking down and simplifying complex concepts and providing the didactic base from which understanding was launched.

5   CONCLUSIONS

There is a belief within the product design team at the University of Brighton that the teaching effectiveness of student centred learning is more important than the efficiency of the didactic teaching methods being encouraged through the change of an 'elite to mass' Higher Education system [10]. The adoption of widespread methods and perceived good practice is not however an easy option, and the organisation and control of the syllabus, students and varied learning mechanisms require considerable management. As McWilliam and Haukka point out, the best processes to help people learn often have elements of risk and confusion. This more transformative approach to learning is what Jarvis sees as actively engaging in the creation of knowledge that may, as Martin says, be uncomfortable for the learner and the teacher alike [11].

It is possible to perceive that adopting student centred learning in the face of this cultural pressure and challenging delivery is enough. The study has however re-iterated to the course team the complexity of the learning processes and to avoid any subsequent complacency. The tutor should not be seen in student centred learning as simply the 'meddler in the middle' but as one with a far more challenging role. The course team has noted from the study the importance of fostering all areas of the Kolb learning cycle for example and will be working on more support for the passive learning processes. They will also be giving consideration to learning methods that change over the course of a year to adapt to evolving student needs.

The learning logs and their interpretation may have question marks over their academic robustness, but are felt to have been helpful as thought provokers. Further work may revise the way learning logs are introduced to students, to encourage more numerous and detailed entries into the subject relevance and context, and the learning methods at work. Longitudinal studies may also help to determine if didactic knowledge is not recognised until it becomes applied or contextualised in due course, and employing more common learning log formats may also allow for more quantitative analysis.

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