An updated review of intensive design weeks for architectural technology programmes

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Abstract

Architectural Technologists are uniquely positioned to deliver wholesome technological building solutions; solutions that address sustainability, economics, social and psychological requirements. The structure of the Architectural technology courses differs from institution to institution in the UK; however, at the core is the objective to prepare the students for the real challenge of the multi-disciplinary nature of the profession while in practice. The teaching, learning and assessment strategies employed in delivering the curricula are crucial for achieving this objective. In order to facilitate or improve the teaching and learning experience in Architectural Technology programmes, it is imperative to design and structure teaching in a manner that reflects what the students will experience after graduation. To achieve this real and active learning process, a hands-on approach to teaching (and learning) is required.

The design block week is an intensive learning experience which aims to immerse students in a focussed, project-based environment where through collaborative working they are encouraged to explore unique solutions to design and technological problems. It has long been recognised that intensive block weeks offer advantages to enhance core competency in students as well as fine-tune soft skills. To further contribute to the pedagogical debate, this paper revisits the intensive design week as a tool for delivering experiential learning to students. It re-evaluates the design and delivery of an intensive design week programme, now in its third year. Using quantitative data derived from student feedback, it discusses whether this approach continues to be effective and makes recommendations.

Keywords: Architectural Technology, Alternative modes of teaching, Design Education, Intensive Teaching Block

1. Introduction

The design block week is an intensive learning experience which aims to immerse students in a focussed, project-based environment where through collaborative working they are encouraged to

explore unique solutions to design and technological problems. Advantages of block teaching include flexible mode of teaching, increased student motivation and interaction, improved discipline, time savings and increased academic performance (Davis, 2006; Jonas et al., 2004; Grant, 2001). The nature of intensive block weeks can also help to improve the students' soft skills e.g. time, project and people management.

When the intensive design week was first introduced to the AT programme in 2009, the decision was made to carry out a 'before and after' study to ensure that this approach to teaching and learning contributes value to the programme and is appropriate for design disciplines. Findings from the first study are detailed in Adeyeye *et al*. (2011). The research question was whether intensive teaching continues to positively contribute to architectural technology students' learning experience without compromising the learning objectives defined in the module descriptor. Also whether:

- By concentrating on a smaller subject area/content e.g. architectural structures, students are less distracted and are therefore able to focus and learn more through research, discussion and application.
- By restricting the study period to a five day work week, it is possible to simulate an environment where students can apply what they have learnt.

This paper presents an updated review of intensive design weeks in AT courses. The aim of this study was to evaluate the continued effectiveness of the intensive design teaching and learning programme three years since inception. The design week is now in its third year and this study was aimed at assessing if the programme is still delivering the desired objectives: to enable students to acquire and apply specific knowledge relevant to their core modules in an environment that simulates AT professional practice. It is important to state that this study is not designed to directly assess improvement in academic performance but to assess whether the learning outcome – to improve knowledge and competency in architectural structures, was achieved.

2. Experiential learning

Literature presents an ongoing debate about whether knowledge is gained by abstraction or by concrete experience. Piaget (1972:53) argues that psychologists and behaviourists "...attribute all knowledge to learning as a function of experience", whilst epistemologists "...see in logico-mathematical operations only a simple language of tautologies for translating the data of experience". While Freire (1985:115) suggests that abstract knowledge is merely another's experiential learning, arguing that if knowledge is gained by concrete experience, perhaps it is also possible to derive learning from others' experiences. People learn by fitting new understanding and knowledge into, with extending and supplanting, old understanding and knowledge (Fry et al. 1999). This premise is applied here in anticipation that by building on existing knowledge and experiences rather than independently introducing new concepts, students will develop a deeper understanding of architectural design and technological detailing. Principally, applying experiential methods in design disciplines assist the teacher to facilitate learning by encouraging students to reflect upon those experiences and draw in the established theories developed by others. In this environment, students

can also obtain knowledge through a shared experience which they could then link to their individual and unique experiences. Exponents of experiential approaches to teaching also suggest that by integrating 'doing' into the learning environment, it is possible to facilitate deep and active 'learning'.

Globally, rapid transformation and changes are taking place and the higher educational institutions are not immune to this trend. It is therefore not surprising that teaching methods have also been changing. As a part of the process of adapting to changing student demands, universities have had to consider new ways of delivering course content. A practical example of this is the move from traditional to 'intensive' modes of teaching (Davies 2006) by some well established institutions. Davies defined *Block modes as very large chunks* of teaching time, for example whole day sessions, offered in week-long mode, two or three-week long mode and weekend mode. These forms of teaching are in contrast to 'traditional' teaching formats of hour-long or 2 hour-long lectures during semester-length courses (Jonas *et al.* 2004). Intensive teaching was initially developed to allow institutions to deliver content in an accelerated schedule because of time constraints and has its roots in a variety of educational environments (Ho and Polansky 2007).

Other research findings have suggested that learning outcomes are equivalent or better than the traditional mode of delivery. Some reasons given for this are better student interaction and commitment, as well as increased academic performance (Grant 2001; Seamon 2004). This supports the claim that more students now appear to want or even prefer more interactive classes that engage student learning (Ramsden 2003). This is amidst suggestions that students' participation in lectures and tutorials are declining. Although according to Davies (2006), it is also unclear whether and to what extent the method of delivery of course material, i.e., the instructional approach, has a major bearing on learning outcomes. The generic objective of the design week discussed in this paper was to communicate theory reinforced by practical applications. The programme was designed to reinforce theoretical knowledge of structural design and detailing through the process of 'making'. This concept rests on the notion of continuous building and amending of previous structures, or schemata, as new experience, actions and knowledge are assimilated and accommodated.

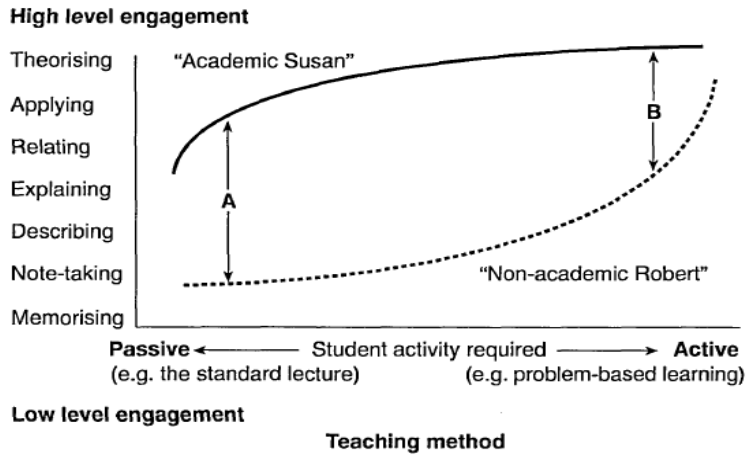

Figure 1 - Student orientation, teaching method, and level of engagement (Biggs 1999).

Biggs (1999) recommended this approach in his discussion on the correlation between student learning and teaching method (Figure 1). He suggested that problem-based learning as an active method *requires* Non-Academic Robert to question, to speculate, to generate solutions, to use the higher order cognitive activities that Academic Susan uses spontaneously. A typical cohort is likely to comprise students across the spectrum in differing percentages. The challenge is to ensure that majority of the students achieve higher order learning where they are able to apply what they've learnt as well as translate this to create new knowledge when required.

Using teaching strategies which realise both low and high level objectives – cognitive, affective and psychomotor (Reece and Walker 2003) help to ensure that learning objectives are attained; albeit from a teaching point of view. It was therefore equally important to create an environment where it is possible to communicate the noticeable progress to each individual student in order to motivate and encourage them to make consistent progress. The intensive design week facilitates this because it forces both teacher and student to 'communicate' and 'interact' in order to achieve a predefined goal. Feedback then becomes an active, continuous process rather than a one-off at the end of the exercise. Ramsden considered prompt and early feedback highly important. He stated that a lecturer or course applying sophisticated understanding of teaching is aware that every evaluation of a student should be valuable to the student as well as the lecturer (Ramsden 2003). This makes assessment and feedback an essential part of experiential learning (Ramsden 2003, Entwistle et al. 1989, Adeyeye 2009). Assessment if properly designed and implemented is beneficial for telling us whether or not the learning was successful, to convey to students what we want them to learn (Biggs 1999a). Combining assessment with good feedback, if well implemented, becomes a reiterative process of ongoing dialogue during experiential learning. And experiential learning closes the loop when the right level of information is provided in an environment that allows for freedom of independent and collective, yet personal thinking. Especially as it gives students a reasonable level of control over their own learning – as an active not passive experience, for which they take pride in the outcome (Adeyeye 2009).

3. Research Methodology

This paper is the second phase of a reiterative action research approach which consists of the following 4 stages, with the last 3 stages repeated annually:

- Examine existing materials on block week teaching pedagogy for design and non-design related courses.
- Design and deliver a one-week intensive design programme on architectural structures for second year undergraduate Architectural Technology students.
- Observe and evaluate the effectiveness of the design block study programme to promote learning, reflection and retention.
- Analyse quantitative (and/or qualitative) data, make recommendations and conclude from findings.

This reiterative approach was proposed in response to the need for more research into the efficacy of block study weeks in design subjects, and to answer the question of the subjective nature and reliability of findings of studies that were conducted. The initial research after the first design week utilised a mixed method approach which was useful for addressing problems that stem from studies relying upon a single theory, single method, single set of data and single investigator (Burgess, 1984, p.144) and helped to ensure that the results are not method specific and help their generalisation within the same course and across other built environment courses. This approach is continued in the reiterative study phases with students required to complete post design-week questionnaires as well as reflective log books. This paper will discuss the findings of the third post-design week questionnaire, comparing findings with the data obtained from the first study in order to determine if the programme continues to be effective in achieving the learning objectives.

To provide further context, the intensive design week (henceforth referred to as design week) programme is delivered to second year AT students only. The first year had 28 students participating and in the current year, 22 students participated. The design week programme takes place in week 7 of the first semester in the academic year and the post-design week survey was conducted between weeks 5 to 7 of the second semester. The duration of the design week is one week; Monday to Friday and strictly from 9am to 5pm each day. At the end of the week, students present their work to a panel of academic and industry assessors. Prior to the intensive design week, a project brief was designed and issued to each student. To facilitate comparison, the same brief issued at the first design week was repeated this year. The client's brief required that students, in maximum teams of four, designed and built a temporary exhibition pavilion on a specified site within the University of Brighton's Moulsecoomb campus. This site, in addition to its unique challenges, was chosen for ease of access and familiarity to the students. Although students were required to conduct a site and space analysis in order to facilitate their design development process, the ability to do this is not one of the intended learning outcomes. The main learning outcome was to further develop student's skills in architectural structures through exploring material and buildability issues.

The project accounted for 20% of the total allocated mark for the (20Credit) module, and was split 60%/40% between the group and individual components. The group work was a 1:100 scale physical model of the pavilion, detailing model(s) of key interfaces as well as a poster. In addition, each individual student was required to submit a portfolio to include their contribution to the group work as well as a reflective log book. Attendance for the five days was compulsory. The group work had to be ready to be presented by 3pm on the Friday and individual portfolios were to be submitted by 10am the following Monday. The limitations of this study were: the limited sample of students – one cohort of 28 students in the first research year, and another cohort of 22 in this research year. Also, even in this third evaluation cycle, it is still difficult to determine a quantitative measure of retention of learning and further research will aim to propose a research framework and methodology for this.

4. Comparative findings

For the first survey, questionnaires were deployed before and after the design week and students' response were voluntary. With the pre-design week questionnaire a 75% response rate was achieved.

In the post-design week survey a 67% response rate was achieved. Three years on, a similar questionnaire was deployed again but this time, post-design week. Participation was also voluntary and 64% of the 2nd year AT cohort participated in the survey. The questionnaire asked students to rate their competence in key skills and competencies such as spatial design and structural design skills as well as soft skills such as communication skills, presentation skills, coordination skills and managerial skills. This paper focuses on findings from the former.

4.1 Survey findings on spatial and structural design

This year's survey commenced with general questions to gauge students teaching, learning, assessment, and feedback preferences. After the general questions, students were asked to rank a range of teaching techniques/methods in order of preference. The results contradict initial findings although methods that promote experiential learning still ranked highest in both studies (figures in brackets indicate data from the first design week study) e.g. work-based learning at 83% (64%), field trips was chosen by 50% (79%), studio-oriented teaching 67% (87%) , and intensive design weeks 50% (73%). It is noted that the figures are lower this year compared to three years before. There was however consensus on formal/traditional 33% (39%). Also this year, student-led seminar 0% (43%), peer and study groups 0% (67%) were the least favoured by students.

Similarly, the students were asked to rank assessment methods in order of preference. Again, time-restricted projects with clearly defined outputs were ranked highest by 100% (50%) by the responding students and the design week is centred on this form of assessment. Also results on problem-based learning e.g. design projects linked with real sites and issues was consistent and ranked highly by 100% (80%) of students. 67% (57%) did not like examinations. Following on from this, 69% (79%) of the students preferred immediate feedback e.g. during design 'crits' or in-class. This they considered more beneficial to having to wait to find out how they've performed in their projects, coursework or examination.

As shown in the previous section, the questionnaires comprised questions which attempted to measure knowledge and skills as perceived by students before and after the design week. Knowledge and competence in architectural structures was the primary learning objective of the design week. For the purpose of analysis, improvement in spatial design skills was also assessed as the two factors are not independent of each other. Therefore, questions were designed to particularly measure if this learning outcome was achieved. Again, the percentages in brackets represent data from the first design week. Before the design week, 60% (29%) of students rated their *competency* in spatial design as good, while 20% (53%) rated their competency as average. None in both instances considered that their competency of excellent standard (Figure 2a).

After the first design week (Figure 2b), on one hand, the *knowledge* in spatial design improved with 20% (6%) of students now considering their skills excellent. However, the 'good' to 'average' figures remained the same at 60% (13%) and 30% (75%). Also, it was noticeable that the data from the first design week showed that those students felt their spatial design skills was worse after the design week. The reasons for this was further investigated and reported in Adeyeye *et al*. (2011). This year's

figures are not much improved, primarily because there were little spatial design requirements in the client's brief and majority of the students concentrated their efforts on the structural design, detailing and buildability.

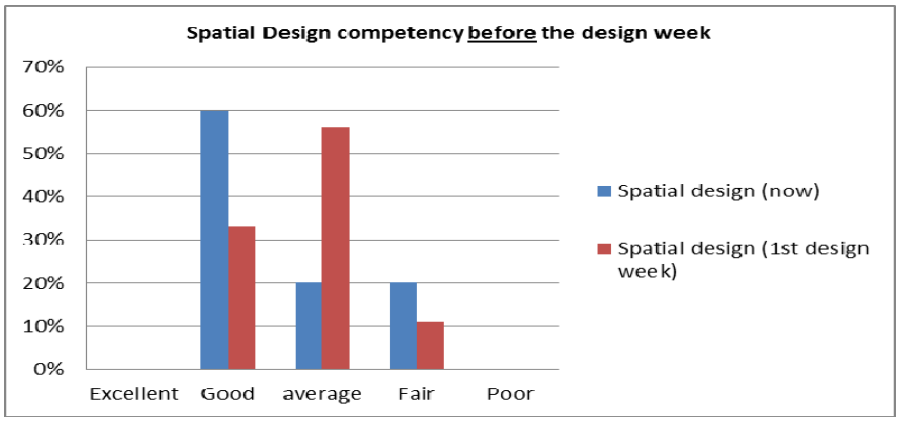

Figure 2a: Self assessed spatial competency before the design week

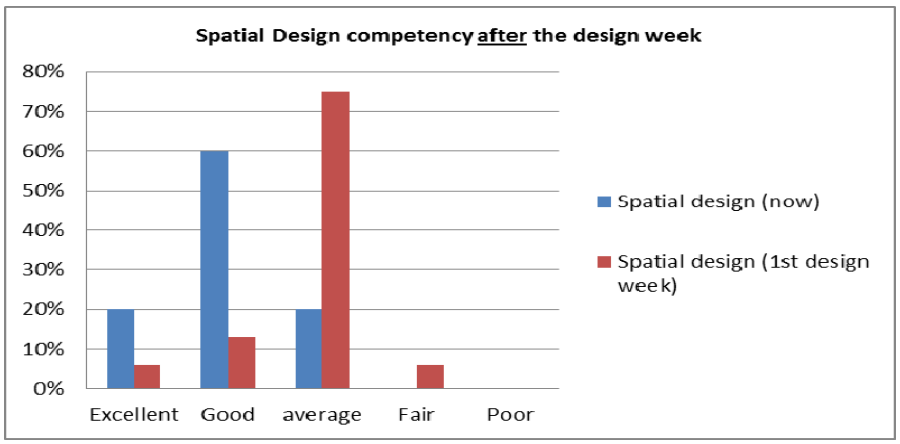

Figure 2 b: Self assessed spatial competency after the design week

Similarly to spatial design, questions on structures were asked in the pre- and post-design week surveys. Before the design week, 20% (33%) of students rated their *competency* in architectural structures higher than average, while 80% (67%) rated their competency as average. None in both instances considered that their competency of excellent standard. After the design week, all the students (100%) agreed that their *knowledge and competency* of architectural structures increased significantly after the design week. Comparatively, only 88% made the same assertion three years ago at the first design week programme.

Although the design week appears to be successful in achieving the primary teaching objective which was architectural structures, it was important to gauge the extent of this success and how much of the positive change can be attributed to the design week. The response varied considerably. Figure 3 shows the comparative data between the first design week three years ago and the most recent one. Findings show that students attributed their significant successes in learning to the design week three years ago. Dissimilar results were found this time when students were asked if their increased

competency can be attributed to the design week. In the current study, majority of the students indicated a neutral benefit for the design week. This is however understandable. The purpose of the first design week was to augment the curriculum in architectural structures. Since the first design week, the teaching curriculum had been revised and the current AT students had received lectures in architectural structures which culminated in a group-based structures project prior to the design week.

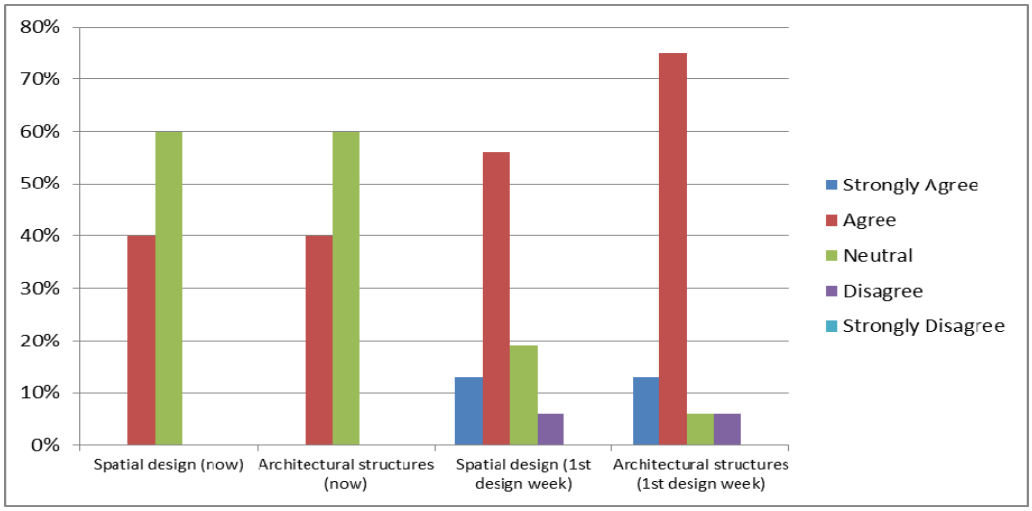

Figure 3 Learning attributable to the design week

The finding presented in the previous paragraph reflected the opportunity for students to further apply their knowledge and competency in an intensive environment whilst gaining other non-tangible skills or benefits. This is quite fundamental as the traditional teaching approach sometimes mean that new concepts are introduced each week, leaving the students little time to digest learning from the previous weeks. This is demonstrated in the comments below:

> *"...liked the design week because it had clear objectives, achievable targets within structured timetable"*
>
> *"...liked the design week for the fast learning environment, group learning through testing and discussion"*
>
> *"...really good to be under strict deadline and make daily progress towards this"*
>
> *"...liked the teamwork and the efforts everyone put into the projects"*
>
> *"...designing and practical learning. Enjoyed sketching, then putting these design methods into practise"*
>
> *"...the ongoing support/ guidance received throughout the week"*
>
> *"...stretched my limit of patience, but enabled a more hard working persona that i hadn't previously seen in myself"*
>
> *"...good to have people from industry come in for the end of week 'crit'. Makes the whole project feel more live-like/pitching to clients"*

Interestingly, when asked what they did not like about the design week, majority of the students primarily said they would have preferred to choose their own team members. Others include the fact that the studio was not accessible for 24 hours, in essence wanting to work longer than the time allowed, one said he/she did not like the pressure caused by restricting the time within 9am-5am. Other students mentioned their performance during the final presentation, reflecting that they did not do so well but also recognising the need to improve. The design week was therefore beneficial for promoting self-reflection in students where they felt comfortable to assess their strengths and improve their weaknesses.

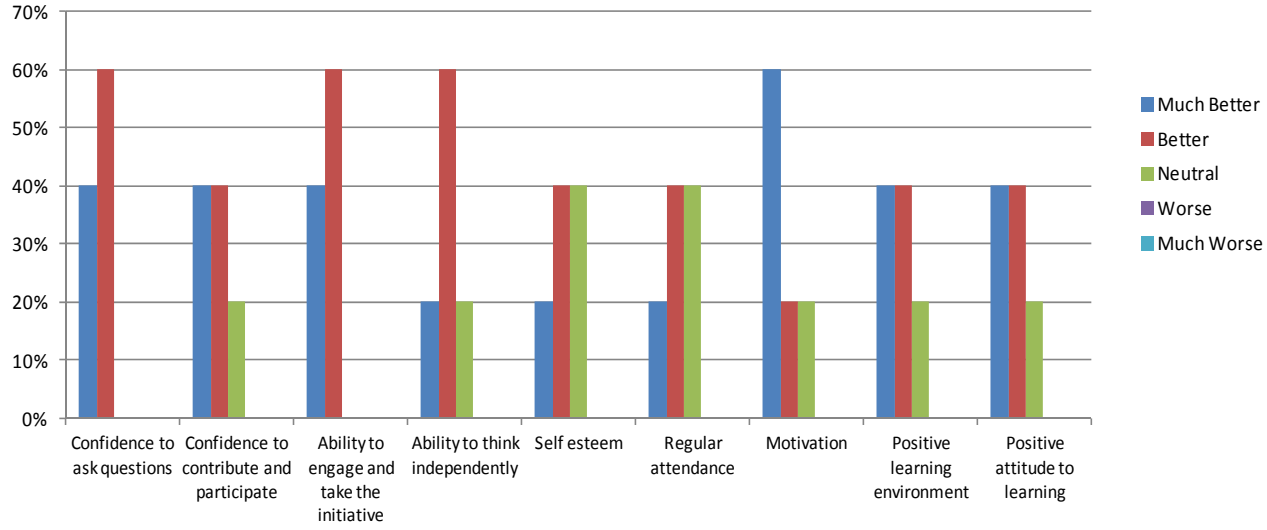

Figure 4a Current study: Other perceived benefits from the design week

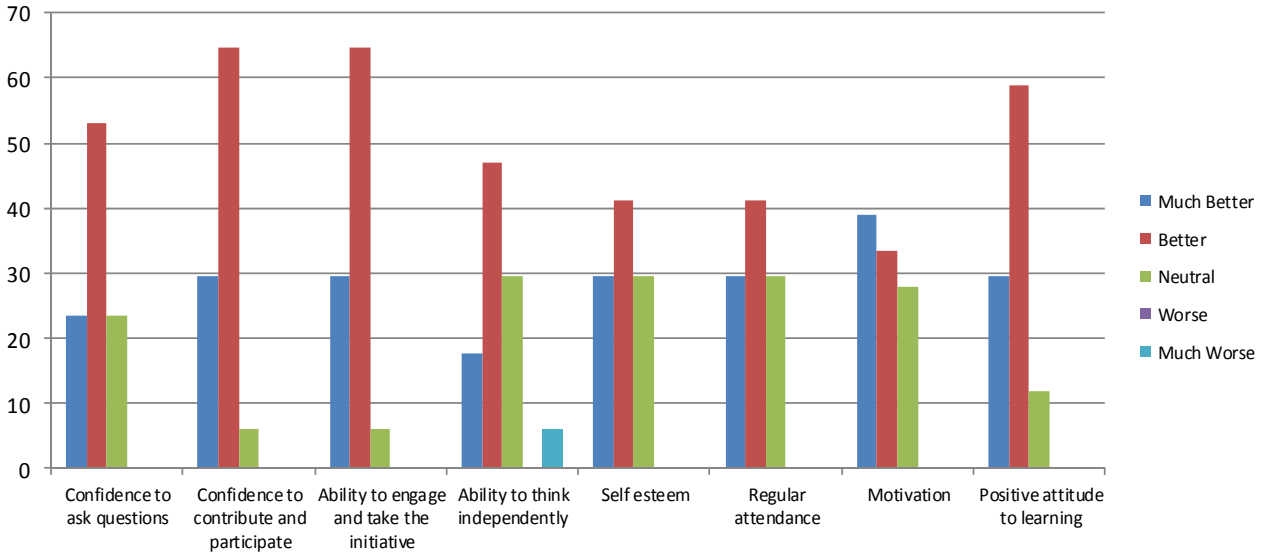

Figure 4b Previous study: Other perceived benefits from the design week

Lastly, students that participated in the third design week gave the following feedback about what they indirectly gained from the design week. Figure 4a shows that 60% of responding students stated that their motivation significantly improved after the design week. 20% said it was better. The same

percentage also stated that their confidence to ask questions, participate, engage and take the initiative in their learning was also better than before the design week. No student said they were worse off although 40% of students remained neutral about self-esteem and improving their attendance. Comparatively, in the previous study (Figure 4b), 39% of responding students stated that their motivation was much better after the design week, than before the design week. 33% said it was better. 24% said their confidence to ask questions was much better, against 53% who said it was better. Similarly, 29% and 65% said their confident to participate and contribute in class was much better and better respectively. Similar trends was repeated for each of the variables except for a significant increase in positive attitude to learning and one of the responding students stating that their ability to think independently was much worse after the design week.

5. Discussion

This research aimed to assess if the intensive design week programme in the AT course continues to be effective after the third year. Findings confirmed that the students continue to respond positively to, and benefit from the challenges of the design week. Also, findings confirm that the design week continues to help students to achieve the learning outcomes, which was primarily on architectural structures. However, this year's finding highlights that the design week was more beneficial to reinforcing experiential learning, rather than creating new knowledge. Thus confirming that the design week approach is more beneficial for reinforcing and translating theoretical knowledge (e.g. gained in lectures and studios) into practise (e.g. physical modelling), thereby helping students to understand the cause and effects of their designs and to resolve practical design issues in a practical way. The design week was not effective in teaching spatial design in both studies and it can be concluded that intensive block teaching is not a suitable method for this. The studio-based learning approach was much preferred method for this subject.

At the beginning of the paper, it was argued that feedback and assessment are integral parts of experiential learning. The design week environment enables the use of both Formative (assessing for learning) and Summative (assessment of learning) assessment methods in a seamless manner. This is perhaps the most useful outcome of the design week in the three years of running. Integrating many opportunities for feedback and assessment into the week's programme considerably improved the perception and attitude to the summative assessment at the end of the week. Majority of the student's feedback did not consider the Summative 'crit' in terms of what their grade was but in terms of the value of the 'on-the-spot', direct feedback received, the opportunity to demonstrate their presentation and communication skills and the opportunity to interact with and receive feedback from peers, academics and industry practitioners. Another consistent finding was the benefit of the design week in improving non-tangible, yet valuable soft skills in students through engaging in tangible, measurable projects. After spending an entire week in the same space with staff and other students, the subsequent studio sessions were much improved. Students become more confident to ask questions, engage, participate and support one another. They had a more realistic perception of their strengths and majority commit to improving their capabilities. Motivation and engagement is usually better than before and the staff-student relationship significantly improves as well.

6. Conclusion

This research confirmed findings from previous studies which stated that intensive block teaching produced learning outcomes which exceeded what would have been achieved through the traditional mode of teaching and assessment. However, it is more effective for translating theoretical (passive) knowledge to (active) experiential learning. In addition, the design week is highly beneficial for improving student engagement and interaction. Evidence also suggests medium term retention of technical skills to support the soft skills; time and project management and people skills gained. In view of these findings, the intensive design teaching programme will be significantly revised and scaled up to deliver a cycle of teaching, learning, feedback and assessment which ensures that in addition to delivering the knowledge aspects of the curriculum, students are afforded several opportunities to translate these into long term learning through practical, experiential exercises.

To conclude, the aim of this research was to investigate the continued efficacy of the design week as a means of improving knowledge and competency as well as participation, engagement and the learning experience of architectural technology students. At the end of this study, the efficacy of the design week was confirmed, however, the learning outcomes delivers a different kind of value in ensuring that passive teaching is translated to active learning by students. Questions for further study include; the extent to which the intensive programme results in long term retention of learning and if the approach to teaching and learning is viable for other subjects within the Architectural Technology curricula. The transferability of these research findings to other disciplines or even interdisciplinary subjects is also worthy of exploration. Lastly, future studies can aim to develop a framework for designing, implementing and evaluating intensive design weeks in vocational subjects such as architectural technology.

7. Acknowledgements

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