APPLYING ACTION RESEARCH TO STRUCTURE INTERACTIVE AND ENGAGING DESIGN STUDIOS IN ARCHITECTURE SCHOOLS: A CASE STUDY OF UNIVERSITY OF BAHRAIN

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ABSTRACT

Architecture design studio is a social environment where interactions among students and a teachers serve as a pedagogical tool to enhance the students' imaginative and creative thinking. However, keeping students motivated for long hour studios is a challenging task. This Action Research (AR) is conducted to evaluate the effects of "structuring" the teaching sessions that take place in the architecture design studios to observe their effects on the motivational level of the students while working for prolonged length of time in a studio. The study examines two types of structured studios: *semi-structured* studios and *fully-structured* studios through a meticulous review of the planning, implementation and the cycle of activities. The findings reveal that a higher level of motivation is observed in students when the studio structure is designed to encourage collaborative learning amongst the students, and when the teacher acts as an active facilitator in the studio instead of being a mere observer.

INTRODUCTION

This study is performed at the second-year level Architecture-Design-Studio, ARCG-210 of the University of Bahrain. The research shows integration of the UK Professional Standard Framework (UK-PSFS); Activities (A1-A5), Knowledge (K1-K6) and Values (V1-V4) where applicable.

Architecture studios are the main design related educational activities of architectural education where the students receive hands-on instructions and guidance. The typical education techniques used here are *desk crits*, where project critiques are delivered at the student's desk, and there are *juries* which are multi-layered open discussions on how the complexity of the open-ended design problems have been resolved by the students. This pedagogy enables students in enhancing their understanding of the design process from a superficial approach to a deeper approach.

During the period of teaching at the selected research site, the researcher observed that, generally, the students are not used to staying and working for long hours in the design studios. Spending more time in a studio plays a vital role in developing a constructive approach, enhancing design capabilities and improving visual perception. As the foundation of the curriculum in architecture is learning the design process (Demirbas and Demirkan, 2003).

It is of utmost importance to search and learn about the reasons of students' decreasing interest in the long-hour studios and to look for the feasible solutions to this problem. This research aims mainly to investigate the underlying causes behind the students' inadequate social interactions, lack of presence in the studios and the lack of positive orientations towards the learning outcomes (Biggs and Tang, 2011).

Action research is a process that involves action, evaluation and reflection as a method of improving the learning process. The process is designed to collect evidence in order to create changes in practice through participatory and collaborative research. The idea behind action research is to create reflective practices in the participants through a process of observations and interpretations. In an action research, plans are formed, then implemented, observed, revised, and re-implemented, creating a continuous cycle of improvements through reflections. Findings of an action research are not absolute; rather a point in the cycle of continuous improvements.

Action research has many benefits. The educational journey should be designed to produce an effective practice path for students, rather than just achieving positive results. Action research helps educators to be constantly aware of their journeys, and find ways to constantly improve their educational practices, through a culture of inquiry. This culture of inquiry helps educators in an active process of assumption, speculation and development of self-awareness with respect to their individual capabilities (Clark, al, el., 2020). Students when involved in action research become capable of observing, obtaining and analyzing knowledge instead of focusing merely on the information given by their tutors. This process of engagement influences a culture of practical application and bridges the gap between theory and practice.

AIM AND OBJECT

The aim of this study is to improve student motivation during long hour studios and findings of the study can provide solutions for future implementations.

The process of the studio investigated in this research was designed to use the practice of action research as a way to form an observation-based informative journey for a practical application. The research was participatory, with the researcher being the teacher, interacting with the students to create a cycle of planning and control for achieving the best practice of implementation. It is important to note that the results of this exercise are not absolute; rather a tested method of implementation for a specific group of participants. The main objectives of this are:

- To evaluate the effects of introducing "*structured studio sessions*" on student's motivational level during long hour design studio.

- ATo develop an environment of social interaction and constructive learning among the students. To improve their innovative thinking and to enhance their diverse design capacities under the supervision of an active facilitator (Figure-1).
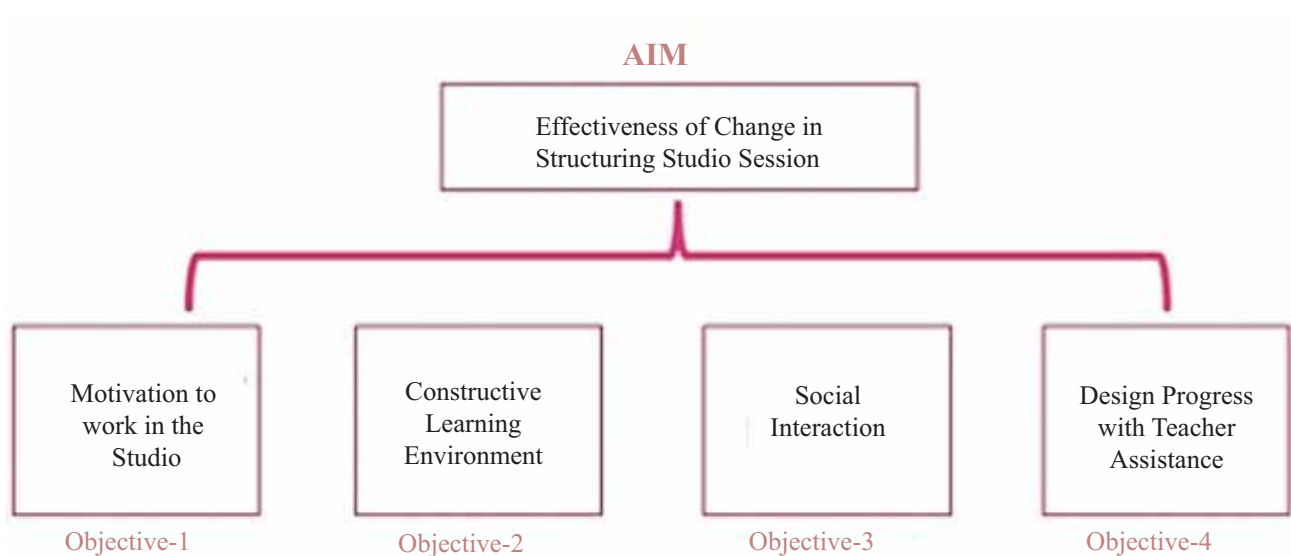

Figure-1: Indicating Aim and Key Objectives

LIMITATION OF THS STUDY

There were no restrictions in this study. However, since the nature of the study is subjective, the judgment acquired through the individual reflections may not be precise. Keeping in view the long duration of the studio which lasted 5.5 hours, the level of interest of students varied as some of them got tired by the end of the studio. This research considers the design studio findings as being related only for the class section which participated in this research, while the other class sections which did not participate in this research were not considered in the research findings.

NEED OF THE STUDY

The primary intention of this research is to induce helpful modifications in the active studio period. The study was focused on the question. How can the interaction and interest of the students be effectively improved by introducing 'structured-studio-sessions' in the architecture design studio?

LITERATURE-REVIEW

This study focuses on scheduling teaching sessions in design studios in accordance with the Intended Learning Outcome (ILO) to help students who are working in the studios for extended periods of time, as the goal is to travel, i.e. overall design process, rather than to arrive, i.e. the end result (Biggs and Tang, 2011). Learning environments need time management and teaching strategies in order to achieve ILOs (Biggs, 1987). By considering students' learning interests and scheduled activities, a "structured studio" was used as a teaching strategy. As mentioned earlier, time organization and structured coaching helps to distinguish the diversity of individuals (Williams and Williams, 2011). This literature review imparts that while organized teaching helps in designing studio activities, it also helps in developing constructive theory, social contact was emphasized for helping the students engage in the educational process and enhancing ILOs (Doran, 1999). Educational environments which encourage social interactions allow students to consult through amalgamation between prevalent knowledge and innovative information. Numerous theories are included in the social learning theory. This theory combines two different learning concepts, including active participation and passive participation (Tennant, 1997; Ashworth, Brennan, and Egan, 2004). Bandura has introduced social cognitive theory (SCT) as the human behavior of social learning in intellectual environments (Bandura, 1986). Three elements of human behavior are: the reciprocal model, dynamic influences and environmental influences.

The crucial aspect of the reciprocal determinist theory states that people can act either as a change-enabler or a reactor. Behaviorism theory also has influences on the education at third level. Behaviorism determines the vitality of designing feedback and teaching methods, and the assessment process with observable behavior (Mcleod, 2020).

A Conventional Design Studio (CDS) strategy is a structured learning environment with clear objectives and procedures. These structured studios, on the other hand, may have limitations that make it difficult to use traditional design studio techniques. Although CDS has been practiced in most of Architecture Schools across the globe, the author observed that not much has been explored in context of fully-structured and Semi-structured studio pedagogy method, while mostly CDS and few other experimental pedagogy methods have been explored and published. This research gap leads the author to approach the studio pedagogy as fully-structured and semi-structured studio environment. The author defines the fully-structured and Semi-structured studio as stated below.

A *fully-structured* studio involves a more traditional method of teaching. The entire studio work is structured and scheduled by the teacher varying from the lectures, site visits (conducted prior to the study), literature reviews, analysis, design and drafting, one one crits sessions, juries, modes and medium of presentation, etc. It focuses more on the extrinsic motivation rather than the intrinsic motivation of effective teaching/learning. In a fully structured studio the dialogue between student-teacher and amongst the students is less, which is highly required for an architecture studio. The role of the teacher is more of a provider and controller.

A *semi-structured* studio on the other hand involves partial structuring and scheduling of the studio work and gives more flexibility to the students on various aspects such as choosing their mode and medium and medium of presentations. It also incorporates more interactions between the student-teachers and amongst the students, through open jury sessions, thus promoting more exchange of ideas and the process of design, which is a condition considered necessary for a studio culture. It focuses more on the intrinsic motivation and less on extrinsic motivation, which would eventually improve the expectancy-value. The role of the teacher is more of a facilitator and moderator.

Action Research (AR) is a method of observing the pedagogical process in order to achieve productive understanding of the process (Metteal, 2012). A typical studio teaching includes individualized teaching sessions, creative criticism and collective discussions. It is observed that after one-to-one discussions, students are not willing to stay and work interactively in a studio for long hours. Therefore, conducting an appropriate AR imperative which can bring effective improvements in this practice and bring a dynamic environment in the studio. The main challenge is to determine the methods by which students are inspired to interact and share their creative ideas and opinions amongst one another in order to construct their design comprehension from a superficial level to a deep level (Biggs and Tang, 2011).

Gregor's theory-Y states that learners deliver their best when they are relaxed and unrestricted (Biggs and Tang, 2011). The purpose of a design studio is to unlearn and deviate students from the pre-defined and traditional mindsets, so that they can explore their creativity. However, the learning environment needs some controlled processes to encourage them towards multi-dimensional thought-processes and enhance their awareness as designers (Kahveci, 2004). An effective educational environment is created through the satisfactory management of the environment which provides a foundational basis and the necessary conditions (Chadda, 2004). The AR employs a well-thought-out process to detect studio teaching issues. As a successful change in studio teaching approach, structured instruction sessions are established. This adjustment is thought to be important in order to improve studio teaching quality and to foster active engagement and enthusiasm in learners throughout the design studio.

Action research creates a form of self-reflective process of inquiry, where participants can improve their rational thoughts and practices in their social and educational environments. Action research may be individual, where a researcher applies it upon himself or herself, or collective, working within a group of participants. The main defining factor behind action research is to allow change (McTaggart, 1991). In order to bring about positive changes, participants have to be willing to question their environments and practices. In an academic context, action research usually involves participants and researchers focusing on one thematic problem and using the process to resolve the problem. Hence, action research creates communities or groups that are self-reflective and critical, participating and collaborating for a process of planning, implementation, observation and change.

This AR is significant because it directly connects the researcher's educational practice with the study. This method of research facilitates the studio master to identify the shortcomings in his or her pedagogy techniques and hence make positive changes to get better results.

RESEARCH METHODOLOGY

To address the research problems, a systematic technique is used, which includes the necessary training for acquiring and interpreting data (Kothari, 2004). For this research, triangulation method is applied, which is a proven practice to increase legitimacy of data by merging diverse approaches (Yeasmin and Rahman, 2012; Smith, and Kleine, 1986). Personal observations, semi structured interviews and a survey of opinions were used as research tools, which are discussed individually below. The independent variables in this study were the design structure of studio sessions and students willingness to work longer in the studio, which included the pre-design activities such as the literature reviews, site analysis, group discussions, critical thinking about the relevant conceptual approach as per the design project type, occasional five minutes' student's presentations on famous architects' philosophies etc. The students' motivation to remain in the studios and work for longer period in the studios were dependent variables. The students' consent was taken before the commencement of the AR. A total of 16 students between the ages of 18 and 20 years participated in the study, of which 11 were female and 5 were males. The inspirations of this research were the social-cognitive theory and constructive theory, and the hypothesis was that in an organized environment, human behavior is actively contextualized in the social learning process. The research commenced with reflective practices, and employed a sequence of organization, implementation, surveillance and reflection.

Throughout the AR, students' engagement and involvement was the focus. Studio activities should be described with respect to teamwork and individual participation. Assigning individuals specific tasks to accomplish a group output can aid in both individual development and teamwork design (Corazzoa, 2019). The author defined studio context to have many different elements, including using studio as disciplining. Design studio environments offer opportunities for both conscious and unconscious learning (Park, 2020). The research adopted the Conventional Design Studios CDS strategy as structured studios with a systematic learning environment with specific goals and processes. However, these structured studios may have drawbacks which may
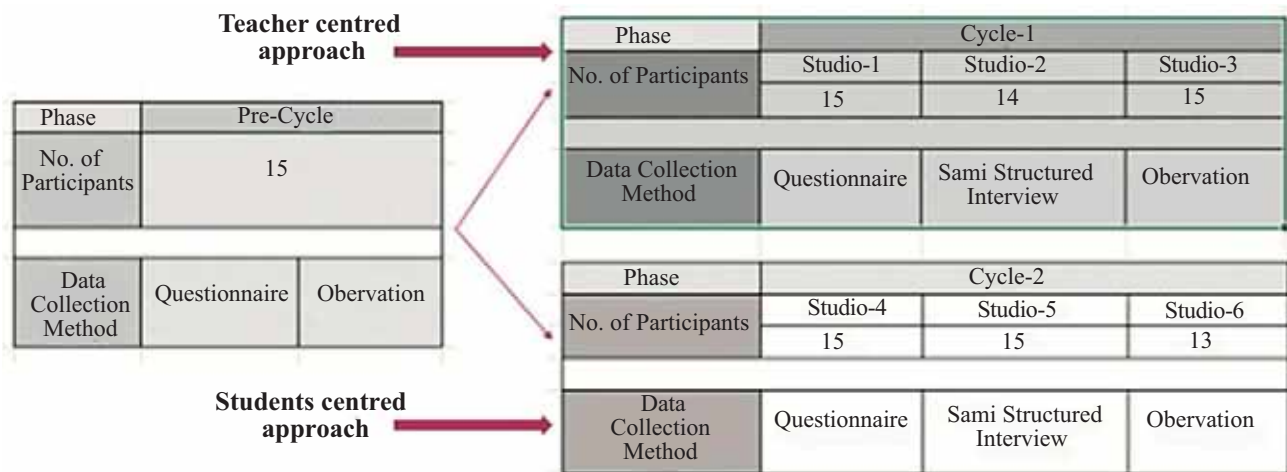
Figure-2: Action Research Cycles and Students` Participation.

create issues in application of the conventional design studio (CDS) processes. The author used semi-structured and fully structured studio pedagogy to see students' motivation to progress in the university learning environment. The teachers or instructors in such studios are expert professionals from the fields. The structured and scheduled task activities makes the learning process more efficient as scheduled.

This research encompassed two primary rotations as cycle-1 (Teacher centered approach) and cycle-2 (Student centered approach), preceded by a phase which supported an understanding of the existing interest levels of students to remain in studio and work (Figure 2). The survey of opinion was conducted in each cycle which helped to get feedback of their struggle in developing quality work during studio timings. After every cycle, students' progress was measured to see their design improvements and drawing developments. Each stage helped to implement a new element of change to enhance the work progress. Students interviews assisted to link each cycle with further modification to get better results. The researcher undertook primary positions as the facilitator, a communicator and an overseer-monitor. In order to grow into an effectual classroom organizer, specific skillsets are required in all three roles (Chadda, 2004).

Data-Collection and Application:

Data collection defines a methodical process of gathering and analyzing useful information using standard and validated techniques, which assists in critical evaluation of positive and negative aspects of the methodology used in the research.

The criteria to check the reliability of a good research is dependent mainly on the application of adequate procedures (Kothari, 2004). To determine the rationality of the research methodology, triangulation method was used (Yeasmin and Rahman, 2012) Questionnaire, observation and semi structured interviews are the main tools applied in all the research cycles.

Questionnaire

To critically analyze students' attitude, perception, values and understanding, '*structured questionnaires*' were used in all research cycles. Its structure was kept short and simple to make it easily manageable (Kothari, 2004). The questionnaire mainly followed Likert scale in order to reduce the time spent in construction and also the participant's response time.

The questionnaire was conceptualized to elicit the students' experiences in the design studio. It was structured to be able to generate data that is comparable and would yield specific responses to the aspects examined. However, the respondents were also afforded opportunities to express personal opinions and experiences. The questionnaire comprised of questions related to the duration of the time spent in the studio, the inclinations to be in the studios, related performance outcomes, physical learning outcomes and the likely aspects that would motivate to be in the studios longer time along with the questions as mentioned in (Table 3). The following table shows an outline of the questionnaire; the types and intended data outcomes (Table 01).

Table-1: Examining Level of Student Performance and Motivation Through Questionnaires in All Cycles

Question	Aspects Examined	Response Style	Expected Finding
Pre-Cycle			
1.	Presence During 5-6 Hours	Multiple Choice of Periods	2-3 Hours Duration
2.	Inclination to be in the Studio	Multiple Choice of Standard Responses	Excuse to go out Occasionally
3.	Performance	Semantic Differential Scale	Average
4.	Physical Learning Environment	Multiple Choice of Standard Responses	Traditional Studio Setting
5.	Self-Motivation	Multiple Choice of Standard Responses	Average
Cycle-1			
1.	Duration	Multiple Choice of Periods	Up to 4 Hours Duration
2.	Inclination to be in the Studio	Multiple Choice of Standard Responses	Improve Studio Presence
3.	Performance	Semantic Differential Scale	Average Good
4.	Self-Motivation	Multiple Choice of Standard Responses	Average Good
5.	Successful Motivational Strategy of Cycle-1	Multiple Choice of Standard Responses	Students Engagement Improve
Cycle-2			
1.	Self-Motivation	Multiple Choice of Standard Responses	Above Average
2.	Preferred Learning Approach	Multiple Choice of Standard Responses	Through Peer Observation
3.	Satisfactory Level of Performance Goal	Semantic Differential Scale	Average Good
4.	Satisfactory Level of Performance Goal	Semantic Differential Scale	Average Good/Fully Achieve
5.	Successful Motivational Strategy of Cycle-2	Multiple Choice of Standard Responses	Engagement and Self-Motivation Improve

Semi-Structured Interviews

Interviews are qualitative research technique to elicit data from individuals about their practices, beliefs or opinions. Semi structured interviews with the set of predetermined questions (Kothari, 2004), were conducted to get direct feedback from the students. The interview questions were carefully selected to receive the opinion answers in order to control bias response (Cohen, Manion, and Morrison, 2011). The questions were categorized on the basis of students' learning experience, behavior and knowledge enhancement (Table 2).

The elicited data collected through qualitative and quantitative techniques were to be meticulously analyzed, to reveal some foretold results, expected outcomes and unidentified strictures (Kothari, 2004). Bar graphs are used to analyze quantitative data derived from the questionnaire, whereas, circular process over linear progression technique (Kirklees council) is used to study the qualitative data retrieved from observation and interviews. The modification from one cycle to the next process is connected by simplification of data analysis and research findings.

Observation

Observation is an important pedagogy technique to study behavioral science (Kothari, 2004). For evaluating the learning outcomes, teacher's observation being valid and reliable, is considered as '*legitimate source of information*' (Maxwell, 2001; Kothari, 2004)). Both the tools of observation are employed in this research, including incidental and planned tools (Maxwell, 2001), as well as structured and unstructured (Kothari, 2004). Wide-ranging

Table-2: Sample of Questions during Semi Structured Interviews

Semi Structured Interviews			
Sr. No.	**Question**	**Cycles**	**Category**
1.	What Learning Activity Motivated you During the Whole Cycle?	Cycle-1 and Cycle-2	Experience Question
2.	What Activity did not help you to Motivate?		Experience Question
3.	How Peer Learning Activity helped you to Identify your Design Issues?		Descriptive Question
4.	Do you agree that the design progress can be better in the studio environment more than home?		Learning Behavior Question
5.	Do you Agree that Teacher's Feedback can help to Enhance your Design Progress?		Knowledge Question

Table-3: Rubrics for Observation Notes

Observation Checklist				
1.	Personal Interest/ Self-Motivation	Cycles 1	Cycles 2	Cycles 3
2.	Presence In The Design Studio (Duration-5 Hours)			
3.	Design Progress			
4.	Achievement of the Task			
5.	Personal Comments			

and linked rubrics were also designed for the survey to analyze the efficacy of modification in studio periods (Maxwell, 2001). Learners were observed during their studio sessions with the help of rubrics to maintain the focus and coherence in all three cycles. A check-list was prepared to mark their performance and progress as a result of their motivation (Table 3).

ACTION-RESEARCH CYCLES (PLAN-ACTION-OBSERVE-REFLECT), ITS OBSERVATIONS AND INFERENCES

Pre-Cycle

To analyze the prevalent form of teaching process in the studio, a pre-cycle was performed before commencing with the main cycle. A lightly structured studio was used where the researcher acted as a passive observer; where the primary purpose was introduced and sustained with individual design crit.

The students' perceptions of the studio sessions were judged through a questionnaire designed to see the students' behavior. The questionnaire was focused to see students' performance towards design progress and evaluate their presence in long hour studios. Students' response was analyzed and their design development skills and motivation to work in the studio as an outcome was assessed. The data was collected from 15 students. The result was evaluated that there is a need to develop scheduled activities as a strategy to motivate students to stay in studios and progress.

Key Findings of Pre-Cycle

The observation during the pre-cycle indicated that 50% students preferred to remain in the studio for an average of 3 to 4 hours. Half of the class was interested to receive guidance from the teachers, whereas remaining favored to stay back for completing their tasks. Association of the presence in the studio with the performance in design activities was observed to be at a 'medium' level at the scale from high to low. Majority of the students revealed
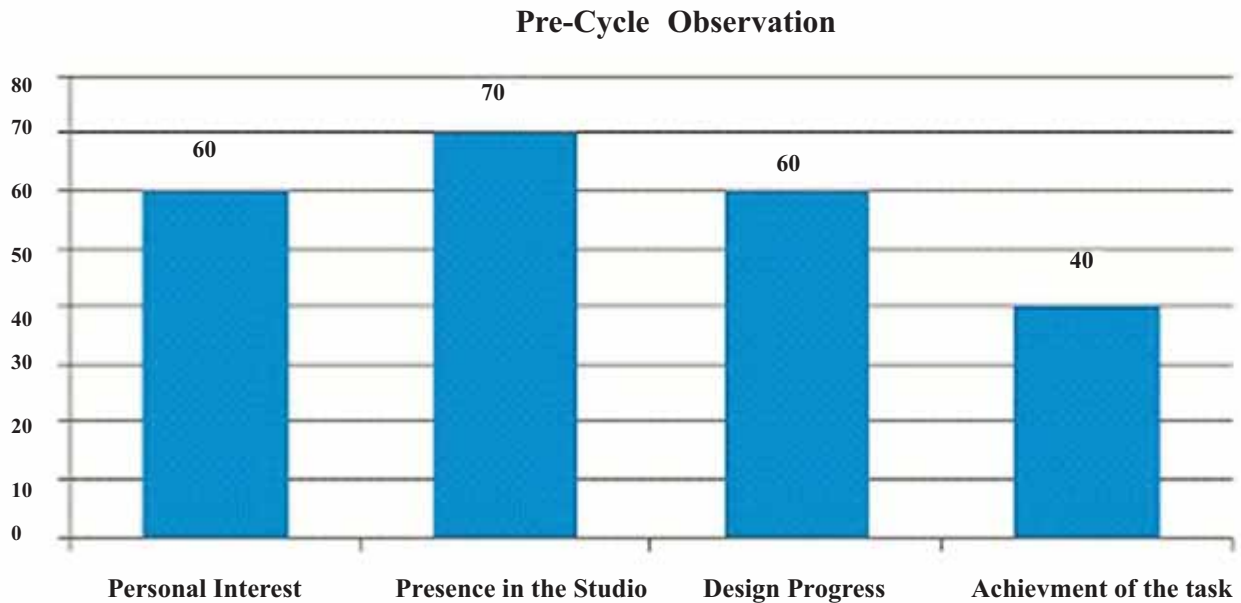
Pre-Cycle Observation

Figure-3: Observation Findings- Pre-Cycle

satisfaction with the studio physical space being adequate, whereas few of them expressed some sort of disapproval or shortcoming (Figure 3).

Pre-Cycle Reflection

The traditional approach of studio teaching, as shown by the data analysis was not always successful. The teacher was unable to focus on the students' individual conceptual process, as well as not playing an active role to inspire them to vigorously contribute in the learning environment. The theory of social learning employs that a person remains a passive receiver of values and behaviors, preserved in a social setting (Tennant, 1997 ; Ashworth, Brennan, and Egan, 2004). Findings of the pre-cycle concluded that some modification is needed to manage students with shared activities. It was also noted that from a questionnaire having multiple choice answers, the resulting outcome was very subjective.

Cycle-1 (Fully-Structured Session):

In the cycle-1, the teacher's role was classified as an active provider, passive-observer and passive-receiver. To inspire the students, a power point presentation related to the design task was displayed. Student-peer-learning was introduced

to facilitate them to provide a design-critique. To get feedback from the students, questionnaires were distributed among them after the completion of cycle-1. Personal observation was noted during studio hours and semi-structured interviews were scheduled with some of the students during working hours.

Key Findings of Cycle-1:

The Questionnaire

The results of the questionnaire showed that 60% of the students preferred remaining in the studio for 4-5 hours, whereas the rest of the students preferred to stay for more than 3 hours. Around 58% students preferred to remain in the studio for perusing guidance from the teacher. A correlation was observed between the students' presence in the studio to their performance in design. It was analyzed that to encourage students to stay in studio, guidance and self-motivation are important factors.

Personal-Observation

Personal observations identified that many of the students left the studio during the recess. Some of the students left the studio for unsubstantiated reasons. Majority of the

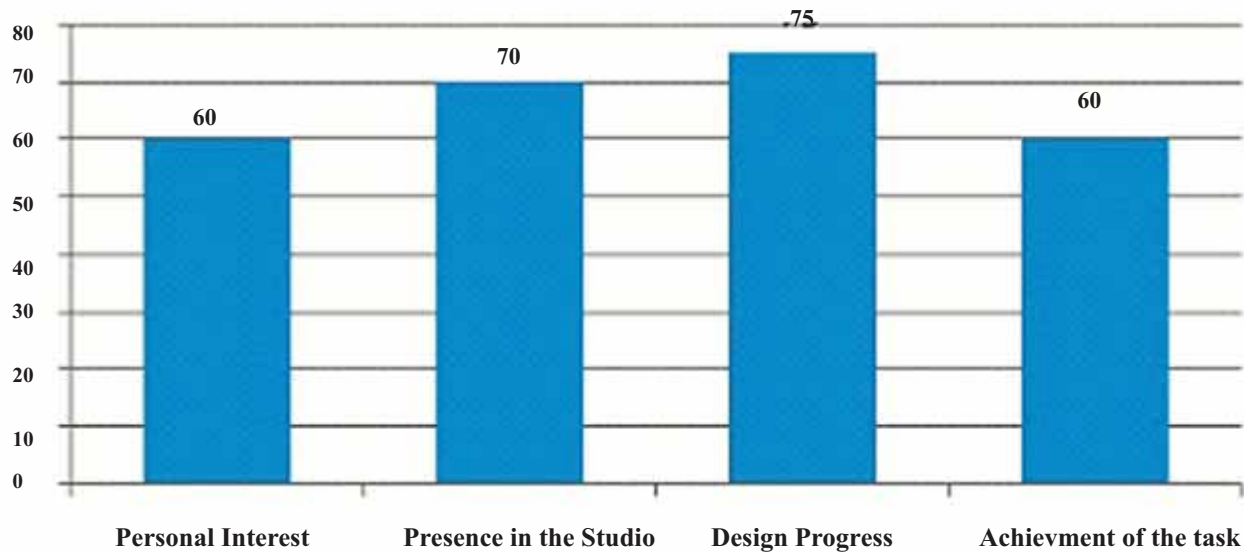## Cycle - 1 Observation

Figure-4: Observation Findings- Pre-Cycle-1

students interacted with each other mainly due to sitting in proximity, while some students interacted to receive peer-feedback.

A good proportion of the students upheld positive communication with the instructor. The educational environment of the studio was enhanced. Teaching sessions were performed in individual sessions and collective discussions. Design development was relatively enhanced during the process Figure 4.

Semi-Structured Interviews

For the semi-structured interviews, four students were chosen based on their individual interests. Most of them responded positively to the studio session modifications. Around 75% students indicated positive reactions to the peer-feedback exercise. All students revealed that when the teacher was fully engaged with them, they were more active in the studio. However, 50% students revealed that they felt dissatisfied during individual student consultations.

Cycle-1 Reflection

'*Structuring*' of classrooms is a fundamental method to facilitate educational process (Williams and Williams, 2011;

Rodrigues, 2013). Getting inspired by the student's positive feedback on teacher's active engagement, a variety of activities were introduced in the classroom structure. Being a passive participator, it was observed that students were not very focused on their work as they were continually seeking for teacher's feedback, guidance and reinforcement to achieve their task. This is coherent with (Smith, 1999) behaviorist orientation stating, 'One's behavior is shaped by environment' to reflect accordingly. According to Margot Syder 'when you reflect, you take charge of your own learning, so you are totally responsible for yourself'. After analyzing the results of cycle-1, fully structured sessions were converted to fully structured sessions. Reflecting on the findings, potential problem areas were conveniently anticipated which consequently helped in exploring the ideas for their improvements (Fry, Ketteridge, and Marshall, 2008). Therefore, a group of three students in peer-review was arranged instead of two students, to develop a more socially active environment, and different sets of activities were introduced for the assistance of fully structured session (Feldman and Minstrel, 2000).

Cycle-2 (Semi-Structured-Session)

After analyzing the first cycle, the next learning environment was designed as a social-cognitive and in semi-structured-
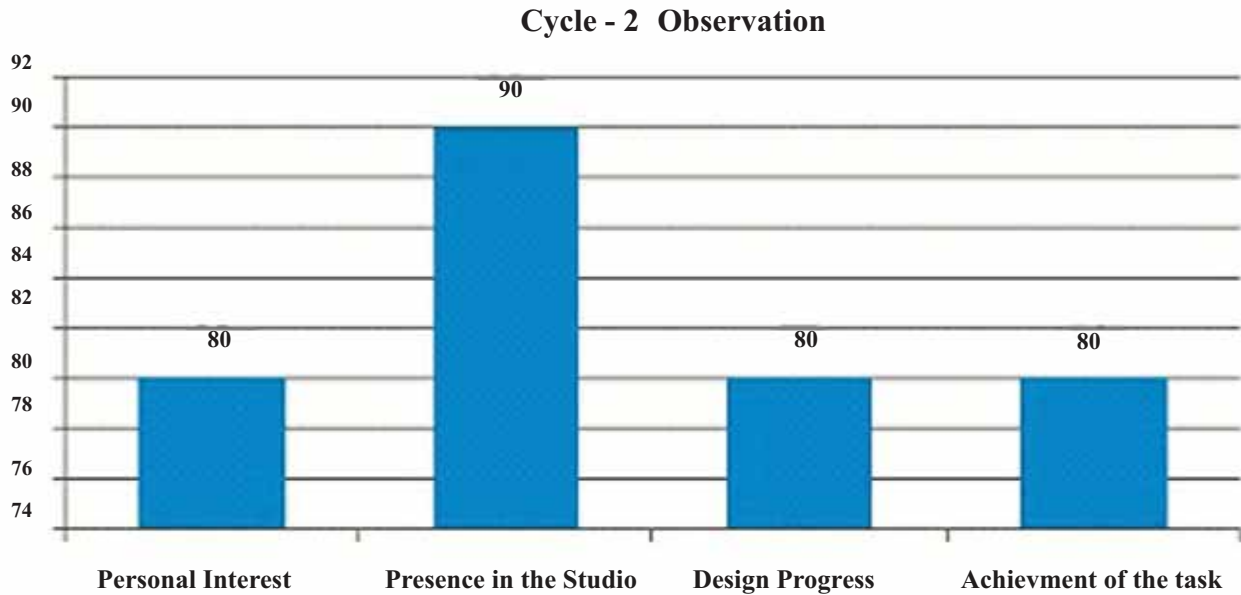
Cycle - 2 Observation

Figure-5: Observation Findings- Pre-Cycle-2

session. The teacher's role was of an active facilitator with an interactive teaching approach, to evaluate the idea that structured sessions create an optimal learning environment (Williams and Williams, 2011). An active dialectical environment was created by cycle-2, in which people and social environment both played an active role. As Freire (2000) endorsed, the social processes mold individual character, specified on the point that adult students should battle methods of enculturation which are isolating and repressive (Tennant, 1997). To develop the environment where teachers inspire students to do their best and to exhilarate them about their learnings, plays an important role in organizing the class rooms (Kagitapu, Ramakrishna, and Rayappa, 2016).

Key Findings of Cycle-2

Questionnaire

During cycle 2, the questionnaire analysis showed good improvement in students' motivation to progress in studio. 100% students preferred remaining in the studio for more than five hours at an average. 75% of the students favored peer support combined with teacher's aide. Studio session performance was extremely productive. It became evident that teachers help to stimulate self-motivation.

Personal-Observation

An interesting observation was that the majority of the students preferred to have their food ordered to the studio instead of going out for lunch. Social contact was found to be constantly active. Nearly every student was interacting with the instructor and within themselves. Constructive learning was enhanced, and social atmosphere was established. Design development had remarkably enhanced in comparison to the preceding cycle (Figure 5).

Semi-Structured Interviews

In order to get varied responses, four learners from dissimilar groups were nominated. During the interview session, 75% students stated that they agreed with the modified environment. 100% of the students showed contention with the exercise of receiving peer-criticism. Interestingly, 100% of the students revealed that they were more vigorous through the studio sessions. 75% of the students found it valuable with respect to their creative learning.
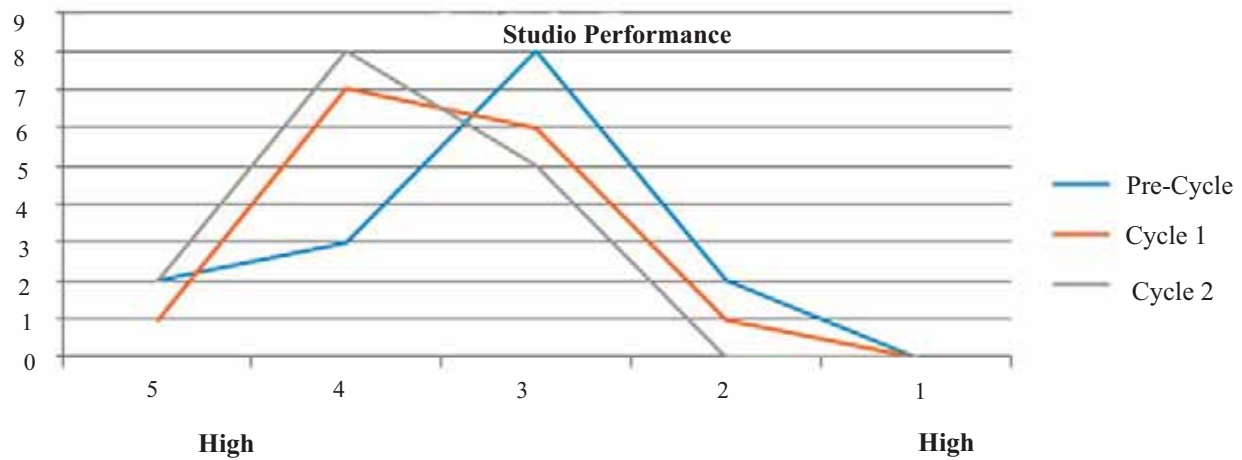
Figure-6: Relationship of Students' Presence in Design Studio with the Performance

Cycle-2 Reflection

Acting as an active participator during cycle-2, it was observed by the teacher that semi structured sessions' outcomes exceeded all expectations. Research imparts that teacher's intrinsic motivation plays a vital role in bringing change as it induced positive change rather than being surface-level (Demyr, 2011). Findings depicted that the students' achievement was significantly dependent on the social atmosphere as majority of them participated actively in a fully-structured studio. It was also observed that may be this motivation for completing the task was influenced, to some extent, for getting the reward. However, learnings of cycle-2 are promising for the continuous improvement in studio-teaching. The idea of Mary and Land (2006), cited by (Fry, Ketteridge, and Marshall, 2008), regarding the development of the threshold concepts assisted the teacher to determine the areas of utmost importance, playing significant roles to help the students (Crawford, 2009).

CONCLUSION

Architecture design teaching does not center on a singular dimension of teaching and learning process. Design studios should be organized in such a way that students are directed towards a multi-dimensional and active thinking process and knowledge-building as a designer. Introducing a change in the current teaching methods, showed that the students' motivation to work in the studio was highly affected by the teachers' efforts. This aspect of teaching is equally important as designing curriculums and planning assessments (Kagitapu, Ramakrishna, and Rayappa, 2016). It validates Bandura's (1986) theory of SCT in which the cognitive learning is linked with human behavior and the human thinking is affected by eternal environment aspects. Fascinatingly, the McGregor's (1960) X&dY theory of 'human assumption and management' was also analysed to a certain extent, which argues that both aspects are valid in diverse social settings with some management-control and autonomy, so students are self-directed to perform better (Biggs and Tang, Teaching for Quality Learning at University, 2011). The semi-structured-studio where a social-cognitive-environment was shaped allowed for more productive education than the strictly-structured studio, which only partially motivated students to take responsibility of their design. Motivating students to be more reflective in their hands-on learning process is an effective teaching practice for studios, since it invokes reflective learning (Biggs and Tang, 2011). The main research idea of bringing progressive change through motivation in the studio performance was successfully achieved in this action research. The students were gradually motivated in each cycle to work in the studio during the long studio hours. As per findings of both cycles, the semi structured studio showed the strongest impact where the teacher and learner were both occupied in various activities. Contributing and working as an investigator as well as an educator added professional strength to the study (Feldman and Minstrel, 2000). The findings and analysis of the action research reflected that students' motivation in the design progress was improved through different activities from cycle-1 to cycle-2 (Figure 6)**.** There was a noticeable improvement in the performance, especially during cycle-2 with the semi structured sessions. The implementation of different activities during the long hour design studio is highly recommended for any design school.

Recommendation for Future Cycle

This Action Research was a reflective process for the instructor as well as the students. The peer review process gave them confidence to constructively criticize and learn from others work. Collaborative learning is a pedagogical challenge for any studio learning environment. In a very practical context, this action research helped to learn through "action" how to introduce various structuring systems in studio learning that may have more prospects to motivate students learning and progress. It is still unanswered whether integrating digital technology in structuring studio culture will have a similar impact. The research proposes a future cycle with a change of introducing advance technology association within the studio learning to meet with the new digital challenges. In addition to introducing the advance digital learning tools, the research also proposes another cycle with a change of working with full scale small projects of students' choice within the scope of their architecture studio project. It could be done in groups where students could be exposed with the Self-Regulated Learning (SRL) which will have life-long impact in their knowledge building (Boekaerts, 1999).

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