

Assessment of the aptitude of architecture students' design evolution with and without plants



Architecture

KEYWORDS: Plants, architecture, students, innovation, assessment.

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ABSTRACT

This paper tries to estimate the ability of the architecture students in terms of creativity and design-evolving potentiality with respect to the presence of the plants. Trees and other green elements have already been proven in cases like curing the patients, recovering after surgery, stress relieving properties, etc. The aim of this research is to measure the probability of the plants to create the innovative ideas of architecture students when they work in studios for generating concepts for their designs. This research was carried out in two methods: First method was carried out in a design studio of 40 number of students with the presence of plants and trees, while the second method was carried out in another studio with the same number of another set of students without the presence of plants and trees. The care was taken in both cases that all 80 students are equally cognizant in terms of creation. The final assessment was carried out in three stages: 1. Duration of the creation. 2. Proficiency of the creation. 3. Percentage of best creation. After the miniscule scrutiny of the measurements undertaken, the results showed that presence of the plants significantly increased the overall ability of innovation of architecture students.

I. INTRODUCTION:

Plant cognition is the study of the mental capacities of plants. [1] It discovers the idea that plants are proficient of reacting to and learning from stimuli through the progressions of sensitization and habituation. Some research affirms that plants have physical structures working in the same way as the nervous systems of animals. [2] Plants no longer serve as just aesthetic appeal and comfort, they can also enhance well-being and a person's overall health. The presence of plants have a calming influence producing a friendly, breathing environment conducive to a positive workspace. "To businesses, it should be equally as important to understand what features can improve performance at work and make employees more productive," said Dr. Roger Ulrich, researcher of the study and Behavioral Scientist, director of the Center for Health Systems and Design, Texas A&M University in College Station. [3]

Offices devoid of pictures, souvenirs or any other distractions are "the most toxic space" you can put a human into, say psychologists in a research paper, which says workers perform better when household plants are added to workplaces. Dr Chris Knight from Exeter University and his fellow psychologists, who have been studying the issue for 10 years, concluded that employees were 15% more productive when "lean" workplaces are filled with just a few houseplants, as employees who actively engage with their surroundings are better workers. [4]

In 1968, George L. and conducted a research study to test the creativity of 1,600 children ranging in ages from three-to-five years old who were enrolled in a Head Start program. [5]

- Test results amongst 5 year olds: 98%
- Test results amongst 10 year olds: 30%
- Test results amongst 15 year olds: 12%
- Same test given to 280,000 adults: 2%

Based on 70 prior studies, **it was found that well-designed**

creativity training programs typically induce gains in performance. [6]

II. ARCHITECTURE STUDENTS' INNOVATION:

A critical issue for future research in creativity is to find ways and means of studying creativity that eventuates not in objective, palpable, enduring objects but in subjective, intangible and sometimes fleeting interpersonal relations, educational, social, business and political climates which permit and encourage those in them to develop and to express to the full their creative potentials. [7] In such a context, the problem of studying the creative person is to identify and come to understand those who exert creative leadership. That creative leadership must be rooted within every creator especially architecture students, since they are the creators for every design they do.

III. PLANTS AND CREATIVITY:

New UTS research has found strong evidence supporting the benefits of office plants for reducing stress and negative mood states in office workers. Plants were found to promote wellbeing, and therefore, potentially performance. Staff who had plants placed in their offices showed reductions in stress levels and negative feelings of a magnitude of 30 to 60%, while those with no plants recorded increases in stress and negativity of 20 to 40%, over the 3-month test period. Importantly, just one office plant was enough to make all the difference. In this Nursery Paper, The researchers involved in this project outline their findings. [8]

Previous research has found that indoor plants can result in directly measurable health benefits to building occupants, such as reductions in staff sick leave, possibly over 60%, as well as reduced sick leave absences among school children. [9] Productivity gains on computer tasks, and reductions in perceptions of pain and discomfort, have also been recorded when plants are present [10]. A survey with some 450 respondents found that, on all 10 job-satisfaction criteria tested, scores were higher among staff with plants, and that indoor plants were preferred to window views of planted exteriors [11].

IV. METHODOLOGY OF RESEARCH:

Two classrooms of 40 students in each were selected for the conducting of this research. One class room had plants inside it with the visual of the plants through the windows and another classroom didn't have plants, nor the visual of the plants through the windows.

This setup was maintained for 3 years and the students were taught architectural design for the three years in the same classrooms with the same set of students from the first year to their third year.

The observation was made in various parameters in both the classes. At the end of the three years, a survey was conducted with the prepared questionnaire to all the 80 students.

The synthesis was made after the observation and the survey conducted, with which the result was derived.

V. MEASURES TAKEN FOR THE SET-UP:

The following are the important measures taken into consideration for the conduct of the research:

1. The plants inside the classrooms were ensured not to be artificial, but the natural plants.
2. All the plants were either in green or pyellowish green for not creating the eye pain with releaves.

3. Selected plants which emit lot of oxygen were fixed in the classrooms.
4. The windows and the orientation of the seating of the students were fixed in such a way that the visual of the trees outside the classroom was able to be clearly seen.
5. The classroom without plants were ensured that the room had enough comfort zone with respect to temperature, humidity, air movement, etc.
6. It was ensured that both the classes had equal number of male students and female students (20 boys and 20 girls in each classroom).
7. It was ensured that the average aptitude of the students was the same in both the classes.

2. Comparing to the boys, the mean average of maximum hours without tiresome was observed high in girls.
3. The students in the class with plants and visual of trees through windows show a drastic uplift in terms of wakefulness.
4. Comparing to the boys, again in the classroom with plants, showed the average mean awareness time high.
5. The design evolution product from the classrooms with the plants showed 84% better designs while the classroom without plants showed 62% better designs.
6. The average mean productivity of the students were observed better in the classroom with plants in the difference of 22% increase from the classroom without plants.

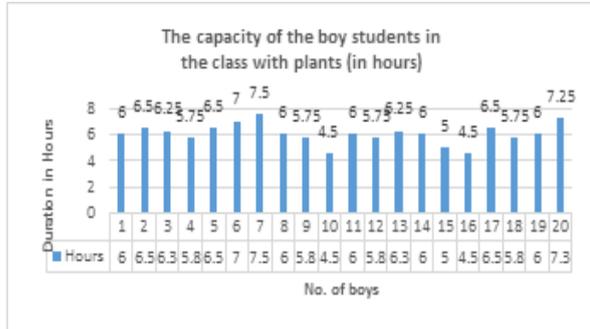


Fig. 1 – Boy students in class with plants

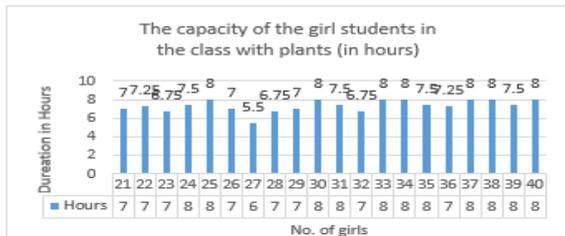


Fig. 2 – Girl students in class with plants

VI. OBSERVATION IN BOTH CLASSROOMS:

The following are the prominent observations made in the classroom which didn't have plants nor the visibility of the trees:

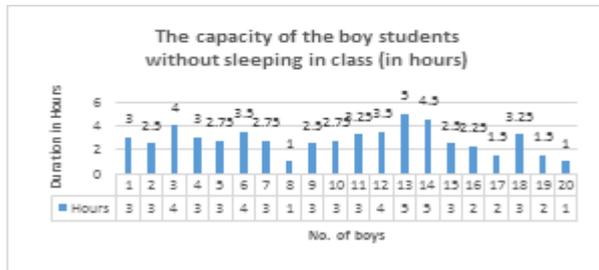


Fig. 1 – Boy students in class without plants

1. The students had always been feeling sleepy during the working hours. Almost 60% of the girls and 73% of the boys in the class were feeling tired and sleepy all through the year.

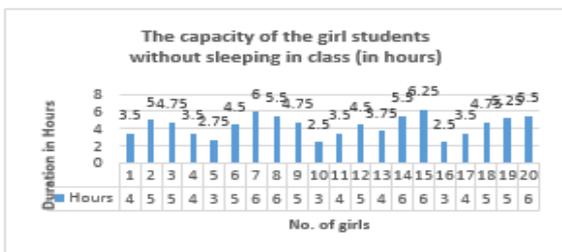


Fig. 1 – Girl students in class without plants

VII. SYNTHESIS AND RESULT:

The observation of the two classrooms with and without plants ambience for the architecture students enabled the following results:

1. The students in the classroom with plants showed more awareness and maximum sleepless bloom comparing to the classroom without plants.
2. Comparing to the boys, all the parameters taken into study were showing high with respect to the girls.
3. The survey conducted in both the classes ensured that the knowledge of the students regarding architectural concept had increased in the course of three years.

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