ACTIVITIES ASSOCIATED WITH TRANSITIONAL SPACES AS INFORMAL LEARNING FOR STUDENTS OF ARCHITECTURE COLLEGES

Thesis Submitted for the Award of the Degree of

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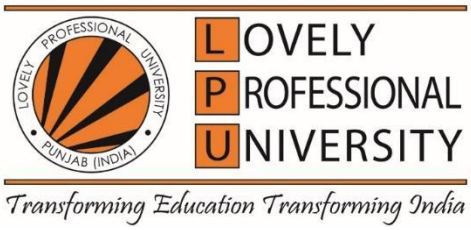

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DECLARATION

I declare that the thesis entitled "**Activities Associated with Transitional Spaces as Informal Learning for Students of Architecture Colleges**" has been prepared by me under the guidance of **Dr. Mahendra Joshi**, Professor, School of Architecture and Design, Lovely Professional University, Phagwara, Punjab. No part of this thesis has formed the basis for the award of any degree or fellowship previously.

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ABSTRACT

Architectural education is one of the earliest forms of education since medieval times in the 5th century and was recognized by world in early 19th century. Education are commonly divided into formal and informal. Formal education takes place in educational institutions in structured form by teachers. While informal education occurs outside of a structured curriculum. To equip students with architectural design skills formal education should be supported with informal education. In recent years, learning has changed from conventional forms to contemporary forms i.e. close space learning (classroom) to open space learning (transitional spaces).

The researcher expressed the need for transitional spaces in colleges for student interaction to improve their informal learning. These spaces are mostly used for conducting various informal learning activities in colleges. Informal learning activities are generally designed to allow students to become more involved in campus to develop leadership and social responsibility.

The review and pilot study suggests that there is a lack of focus on the potential of these spaces to support informal learning activities, particularly in the context of architecture education. The research gap highlighted necessitates an exploration of how transitional spaces can facilitate informal learning. Therefore, the study was undertaken to examine the effect of informal learning activities conducted in transitional spaces on informal learning of the students.

The study developed firstly by identifying the transitional spaces and their characteristics, informal learning activities and informal learning indicators. Secondly by selecting two architecture colleges under pune university to examine the effect of learning activities on informal learning of the architecture students.

The information on availability of transitional spaces, activities conducted were collected from colleges and experimental research design was conducted in selected colleges to examine the effect on informal learning of students. The research design consisted of conducting experiments on the selected subject related to course work of the students. The students were exposed in the classroom in formal learning situations and the same group of students were exposed in transitional spaces to the same activities for informal learning experience.

The responses of the students were collected from experiment and composite index of informal learning of each student was worked out. The composite index indicates the informal learning by each student. The result of transitional spaces and level of informal learning shows that student's plaza exhibited highest level of informal learning followed by amphitheatre and common area. While analysis of informal activities and level of informal learning depicted model making activity has found to be most effective as compared to workshop and student's presentation.

The effect on informal learning was substantial in transitional spaces as compared to classrooms. When tested for its significance, it was found significant.

The research study insights would be useful for architects and planners for designing transitional spaces in architectural college buildings. While formulating lesson plans teachers should emphasize for inclusion of experiential learning activities in transitional spaces. Management and stakeholders should emphasize providing transitional spaces in their premises while designing college buildings and wherever it is available in colleges it should be used for student's informal activities.

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LIST OF ABBREVIATION

Abbreviation	Description
NATA	National aptitude test for architecture
CRDP	Centre for Research Degree Programmes
S.D.	Standard Deviation
C.V.	Coefficient of Variation
NEP	National Education Policy
HETS	Higher-Education Transition Spaces
UK	United Kingdom
ILS	Informal Learning Spaces
BTF	Bademlik Design Festival
BASS	Betonart Architecture Summer School
CLIS	Collaborative Learning in Informal Spaces
PIA	Passion in Action
DE	Design Explorer
STEM	Science, Technology, Engineering, And Mathematics
DYPCOA	Dr. D.Y. Patil College of Architecture, Akurdi
BCOA	Brick College of Architecture, Pune
SBPCOA	S. B. Patil College of Architecture and Design, Pune
MCOA	Minerva College Of Architecture, Pune
DYPSOAA	D Y Patil School of Architecture, Ambi, Pune
PVPCOA	Padmabhushan Dr. Vasantdada Patil College of Architecture, Pune
ANOVA	Analysis of Variance
TV	Television

GLOSSARY OF TERMS

Term	Explanation
Academic Activity	An academic activity refers to any task or engagement that is related to education, learning.
Amphitheatre	An amphitheatre is a freestanding structure with an arena in the centre, surrounded by seats arranged in a circular or oval shape.
Atriums	Atriums are large open spaces within a building, often featuring a glass roof or walls that allow natural light.
Basic creative instinct	The basic creative instinct refers to the innate drive within individuals to express themselves, generate new ideas, and explore their imagination through various forms of art.
Brainstorming	Brainstorming is a creative problem-solving technique that encourages the generation of a large number of ideas or solutions in a short period.
Canteen Area	A canteen area is a designated space within an institution, such as a school or workplace, where individuals can gather to eat meals and socialize.
Creative & imagination skills	Creative and imagination skills refer to the ability to generate original ideas, think outside the box, and envision possibilities that are not immediately apparent.
Curricula	A curriculum is a structured set of educational experiences and learning objectives designed to guide the teaching and assessment processes.
Corridors	Corridors are long, narrow passages or hallways that connect different rooms or areas within a building.
Communal areas	Communal areas refer to regions or lands that are collectively owned and used by a community.
Community	A community is a group of individuals who share common interests, values, or characteristics and interact with one another within a specific social structure.
Courtyard	A courtyard is an open space enclosed by the walls or buildings of a structure, often designed for recreational

	purposes, gardens, or as a gathering area.
Common Area	Common area refers to spaces within a property or development that are accessible to all people, such as hallways, lobbies, recreational facilities, and outdoor areas.
Conceptualization	Conceptualization is the process of forming a clear and coherent understanding or representation of an idea, phenomenon, or concept.
Composite Index	A statistical measure that combines multiple individual indices into a single value, allowing for a more comprehensive analysis of data trends and relationships across various dimensions.
Discussion	A discussion is a structured conversation or exchange of ideas between individuals or groups.
Education	Education is the process of acquiring knowledge, skills, values, and attitudes through various forms of instruction, training, or experience, ultimately aimed at fostering personal development.
Entrance Steps	Entrance steps refer to the series of stairs or platforms that provide access to a building or structure.
Experiential learning	Experiential learning is a process through which individuals gain knowledge and skills by engaging in direct experiences.
Feedback	Feedback is the process of receiving information about one's actions or performance, which can be used to reinforce positive behaviour or identify areas for improvement.
Formal education	Learning occurs in an organized and structured education or skills development system.
Informal education	Learning resulting from daily activities related to work, family or leisure.
Informal learning activities	Informal learning activities refer to spontaneous, unstructured experiences that occur outside of traditional educational settings, allowing individuals to acquire knowledge and skills.

Knowledge	Knowledge is the accumulation of information, understanding, and skills acquired through experience or education.
Madrasas	Madrasas are educational institutions primarily found in the Muslim world, where students receive instruction in Islamic theology & law.
Multidisciplinary Approach	A multidisciplinary approach refers to the integration of knowledge, methods, and perspectives from multiple disciplines.
Octagon	An octagon is a polygon with eight sides and eight angles, commonly found in various architectural designs and geometric applications.
Open to sky	Open to sky refers to an area or space that is exposed directly to the outdoors, without any overhead coverings such as roofs, ceilings, or other structures.
Pentagon	A pentagon shape is a five-sided polygon characterized by its five edges and five vertices, often found in various contexts such as architecture, design, and geometry.
Ramp	A ramp is an inclined surface or pathway that connects two different levels.
Rectangle	A rectangle is a four-sided polygon, known as a quadrilateral, characterized by having opposite sides that are equal in length.
Reading	Reading is the cognitive process of decoding symbols to derive meaning.
Seating area	A seating area refers to a designated space within a room or outdoor environment that is specifically arranged for people to sit and relax, socialize, or engage in activities.
Semi covered	A semi-covered area refers to a space that is partially shielded or protected,
Semi-open	A semi-open space is a type of topological space that allows

	for certain boundaries to be included while still maintaining some level of openness,
Square	A square is a four-sided polygon, known as a quadrilateral, characterized by having all sides of equal length.
Student's Plaza	Student's Plaza is a designated area within an educational institution where students can gather, socialize, study, and participate in various activities.
Stimulation	Stimulation refers to the process of encouraging or enhancing a response or activity in an organism, system, or environment.
Spaces	Space refers to the three-dimensional expanse in which objects and events occur, encompassing distance, volume, and area.
Skills	Skills are the abilities or expertise that enable individuals to perform tasks effectively and efficiently, often acquired through practice, education, or experience.
Transitional spaces	The areas within a built environment serve as connectors between different zones or functions, facilitating movement and interaction while enhancing the overall flow of design.
Theoretical knowledge	Theoretical knowledge refers to the understanding of concepts, principles, and theories that explain how things work in various fields such as science, philosophy, and mathematics.
Universities	Universities are institutions of higher education and research that provide a wide range of academic programs and degrees.
Values	Values are the fundamental beliefs and principles that guide individual's behavior and decision-making.
Visual & graphic skills	Visual and graphic skills refer to the ability to create, interpret, and communicate ideas through visual representations.
Verandas	Verandas are open-air, roofed structures that extend from the

	exterior of a building.
Wooden Flooring	Wooden flooring refers to a type of flooring made from solid wood or engineered wood, designed to provide a durable and aesthetically pleasing surface.
Graphic design skills	Refer to the ability to design aesthetically appealing and functional visual content for various media, including print, digital, and environmental design.
Architecture Vocabulary	Refers to the specialized terms, concepts, and language used in the field of architecture.
Cutting and Rendering	Cutting, also known as sectioning, refers to the process of slicing through a building or object to reveal its internal structure, spatial relationships, and construction details. Architectural section drawings
Adaptability	The ability of a building, space, it ensures that spaces remain functional, sustainable, and relevant without requiring extensive modifications or reconstruction.
Self Confidence	Self-confidence is the belief in one's own abilities, skills, and judgment.
Subject Knowledge	Refers to a deep understanding of the concepts, theories, principles, and practical applications within a specific academic or professional field.
Communication skills	Refer to the ability to effectively express, convey, and interpret information, ideas, and emotions through verbal, non-verbal, and written means.
Intra -Personal Skills	Refer to the ability to understand, manage, and regulate one's own thoughts, emotions, and behaviors.
Decision Making Skills	Refer to the ability to analyze situations, evaluate options, and choose the best course of action based on logic, reasoning, and available information.

LIST OF APPENDICES

SR. NO	APPENDIX NO.	ITEM	DESCRIPTION
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CHAPTER-1 : INTRODUCTION

Education is the process of acquiring knowledge, skills, values, and attitudes through various forms of learning, including formal schooling, informal experiences, and self-directed study, ultimately aiming to foster personal development and social progress traits (Machynska & Derkach, 2016). It encompasses a wide range of activities and methodologies, including teaching, training, and mentorship, which collectively contribute to an individual's ability to navigate and contribute to the world around them. Education plays a crucial role in shaping individuals' critical thinking abilities, enhancing their creativity, and preparing them for the challenges of an ever-evolving society (Hang, 2018). It also serves as a foundation for informed citizenship, enabling individuals to participate actively in their communities and make meaningful contributions to social change and innovation. It empowers individuals with the knowledge and skills necessary to pursue their passions, engage in lifelong learning, and adapt to new circumstances in a rapidly changing global landscape.(Katyal & Chandel, 2019) This transformative process not only fosters personal growth but also cultivates a sense of responsibility towards others, encouraging individuals to use their education as a tool for positive impact and empowerment within society. This holistic approach to education emphasizes the importance of collaboration and critical thinking, essential skills for navigating complex issues and driving progress in various fields. By fostering an environment where diverse perspectives are valued, this educational model prepares individuals to become proactive leaders who can effectively address social challenges and inspire others to join in the pursuit of a better future. “Education is the passage to progress” (Smith, 2006). The objectives of education may be interpreted in various ways by individuals at distinct levels of society. Parents often perceive the primary goal of education as the enhancement of career opportunities, while religious leaders advocate that education should primarily focus on the ethical development of the students. Politicians typically seek advancements that bear national importance, whereas students and, to some extent, the educators directly engaged in the process, possess entirely different objectives from those previously articulated. The first record of education came around 1525. It comes from Latin education.

The modern school system was brought to India by Lord Thomas Babington Macaulay in the year 1830. The evolution of education in India continued through the medieval period with the establishment of madrasas and universities, which played a crucial role in preserving knowledge and fostering intellectual growth across various disciplines (Datar, 2012). The British colonial period brought significant changes to the education system, introducing formal schooling and new curricula that aimed to create a workforce suited for administrative roles while simultaneously sparking movements for educational reform and accessibility. The post-independence era saw a renewed emphasis on expanding access to education, leading to the establishment of numerous universities and institutions aimed at promoting higher learning and research across diverse fields (Daxner, 2009). This expansion not only aimed to uplift the socio-economic status of various communities but also sought to produce a skilled workforce capable of contributing to nation-building and innovation in a rapidly changing global landscape.

1.1 TYPES OF EDUCATION

Education encompasses various forms, including formal, informal, and non-formal education, each serving unique purposes in the learning process. Formal education typically occurs in structured environments like schools and universities, where a standardized curriculum is delivered by qualified teachers to facilitate academic achievement (Kumar & Bhatt, 2015). Informal education, on the other hand, takes place outside of classroom settings and often includes self-directed learning experiences, such as reading books, engaging in discussions, or participating in community activities that foster personal development (Livingstone, 2001). Non-formal education bridges the gap between formal and informal learning, providing organized programs that may not lead to formal certification but still offer valuable skills and knowledge(M. Singh, 2015). Each of these educational approaches plays a crucial role in shaping individuals' knowledge and skills, allowing them to adapt to various life situations and career paths.

This holistic approach to education underscores the importance of equipping individuals with both practical skills and critical thinking abilities, ensuring they remain competitive in a dynamic job market. Incorporating technology into these

educational frameworks further enhances accessibility and engagement, enabling learners to connect with resources and opportunities that transcend geographical boundaries.

The significance of informal learning cannot be overstated, as it complements formal education by providing unique experiences and knowledge gained outside traditional classroom settings (Hsi et al., 2004). This type of learning often occurs through everyday activities, social interactions, and self-directed exploration, allowing individuals to develop a diverse skill set that enhances their personal and professional growth. Informal learning fosters adaptability and creativity, equipping individuals with the ability to navigate challenges and seize opportunities in an ever-evolving landscape (Rutherford, 2017).

Informal learning cannot be completed without student's interaction with each other in college. These types of interactions usually take place in college transitional spaces because some students have diverse knowledge, ideas, views, and perceptions on topic/ subject. Interaction Like debate, discussion, and group work have an influential role on student's interaction experiences (Kray et al., 2013). Group discussions can turn into a beneficial interaction in which students share knowledge to gain new information.

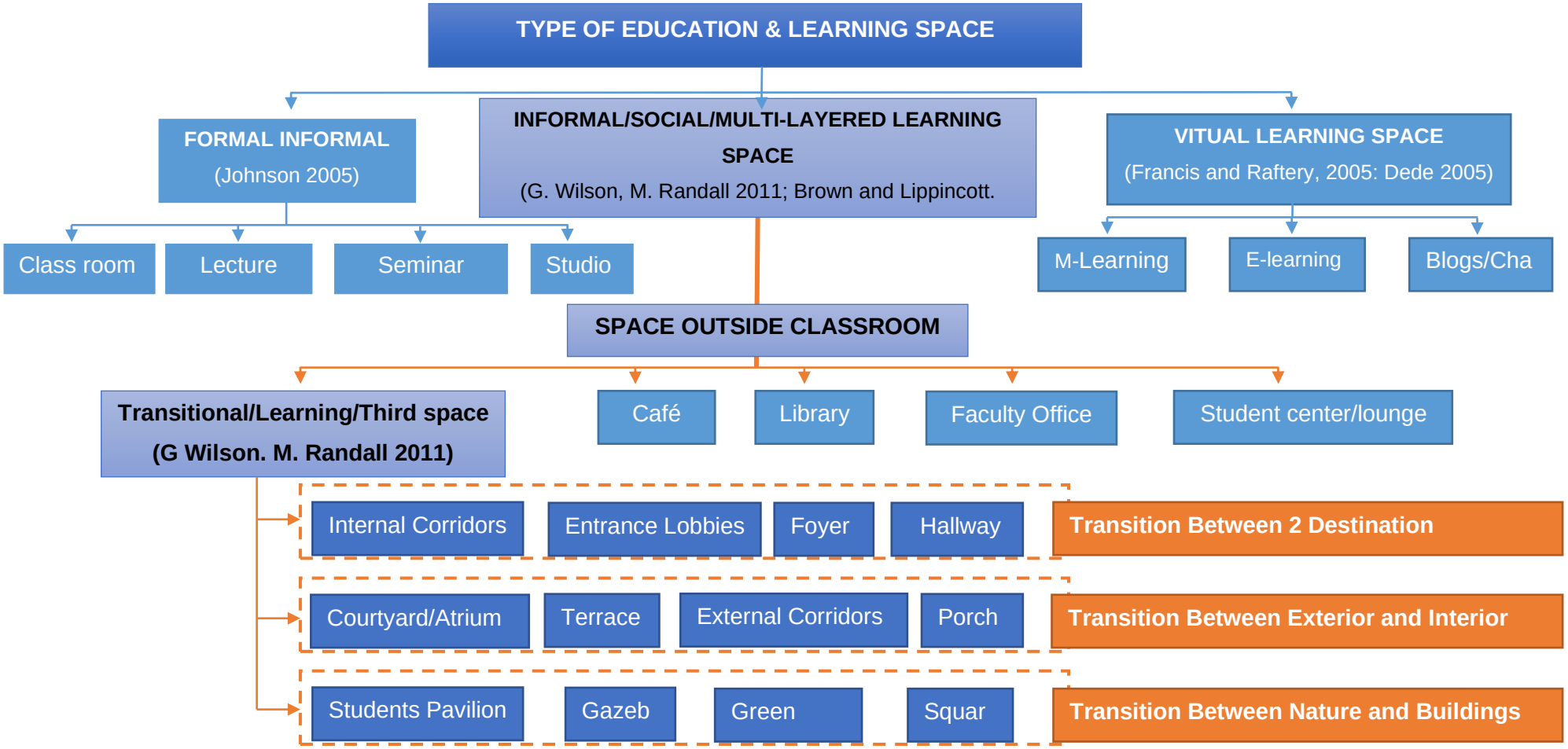

Figure 1.1 : Flow Chart of Type of Education and Informal Learning Space

1.2 ARCHITECTURAL EDUCATION.

Architecture is the art and science of designing and constructing buildings and other physical structures, encompassing a wide range of styles, materials, and functions that reflect cultural values and technological advancements Ballantyne, A. (2013). It involves a careful consideration of aesthetics, functionality, sustainability, and the environment, ultimately shaping the spaces in which people live, work, and interact. Architecture also plays a crucial role in influencing social dynamics and fostering community engagement, as the design of spaces can encourage collaboration, creativity, and connection among individuals.

The architectural education in India dates back to the early 20th century, when formal training programs began to emerge, influenced by colonial practices and a growing need for skilled architects in urban planning and development (Dua & Chahal, 2014). As institutions were established, such as the Sir J.J. College of architecture in mumbai in 1913, they laid the foundation for a structured curriculum that combined traditional Indian architectural styles with western methodologies, shaping the future of architecture in the country. The establishment of these institutions marked a significant shift in architectural practices, fostering a new generation of architects who were equipped to address the unique challenges of India's diverse cultural and environmental landscape (Dua & Chahal, 2014).

Today, architectural education continues to evolve, incorporating contemporary design philosophies and technological innovations that prepare students to address the complex challenges of modern society (Salingaros & Masden, 2008). Challenges in architecture education include the need for a curriculum that balances theoretical knowledge with practical experience, ensuring that students are equipped to navigate the demands of an increasingly competitive and dynamic field (Tzonis, 2014). As a result, many institutions are adopting interdisciplinary approaches that encourage collaborative activities between architecture and other fields such as engineering, environmental science, and social studies, fostering innovative solutions in transitional spaces.

1.3 TRANSITIONAL SPACES

Transition spaces are defined as the connecting in-between spaces. It is a change of space from one state to another and architecture spaces are incomplete without transition spaces. Transitional spaces are that space of experiencing, between the inner and outer worlds and contributed to by both, in which primary creativity exists and can develop (Winnicott, 2018). These spaces are generally used as linking spaces between two or more spaces. Courtyards, verandas, Corridors, staircases, and ramps are common examples. These spaces are most important as they make other static spaces, related to each other.

Transitional spaces have played a major role in Indian architecture. It has varied in scale, type, use and topography. They have played a major role in the division and connection of spaces and have also helped maintain privacy.(Pitts et al., 2008) expressed that entrances, corridors, atrium, lobbies and other spaces through which people travel between the exterior and interior environment or between different interior spaces and suggested that large proportions of buildings could be designated as transition spaces to take benefit of these spaces. While (Nassar & El-Samaty, 2014) describes the relationship between the environment and student's behaviour and identify its use in the design process and proposed vision for these transitional Sprees allows their interactive performance to be measured using an evaluating scale based on functional and psychological criteria.

Student’s preference for transitional Space is decided by the circumstances and characteristics of the place. Different forms and kinds of places to review outside the classroom provide an option for college students to form their choices. They need a preference for learning informally or independently or in groups with colleagues in the transitional spaces that are on campus i.e. libraries, cafeterias, atriums, corridors, terraces, parks, and other open spaces (Ramu et al., 2018). Criteria for college students to pick a space where they will learn are location, availability of supporting facilities, infrastructure, atmosphere, and other factors associated with learning objectives.

1.3.1 History of Transitional Spaces

The prehistoric architecture there was apparent evidence of the usage of transition spaces. In the Neolithic period, there were confined spaces for transition in the adjoining excavated dwelling at Skara Brae (Simpson et al., 2006). In Egyptian, pre-Columbian and persion periods these spaces got a new dimension. In Indian architecture, very ancient civilizations like Mohenjo-Daro and Harappa were constructed with significant usage of transition spaces (Walter A. Fairservis Jr., 1961). Like corridor connecting two houses to the courtyards. Elegant verandas gave way to lobby areas and porticoes as architectural and cultural traits changed over time. These spaces have evolved as a result of architectural & cultural changes, when we compare the transitional spaces designed in earlier times are similar to present design (Sprake & Thomas, 2007). Courtyards being the major transitional space were found in the era of Rajput architecture as well as in Maharashtra. In tropical regions, skylight is generally distributed and is substituted by a courtyard (Gangwar, 2016).

1.3.2 Transition spaces in Indian context

In Indian architecture, transitional spaces play a very significant role, especially in residential buildings (Suzan Hassan abdel Hamid ElGazar, 2022). They played a role in both dividing and connecting the inner and outer space. The typology and nature of transitional space have been changing with time. The earlier cities were dense hence the transitional spaces were tight and mostly bounded by all sides, creating a sense of space and comfortable scale (Sprake & Thomas, 2007). As the settlement grew, they became more planned and organised. Hence, the transitional spaces were organised and no longer acted as left-out spaces.

1.3.3 Importance of Transitional Spaces in Architecture

Transitional spaces in architecture play a crucial role in creating fluid connections between different areas, enhancing the overall experience of movement and interaction within educational environments. These spaces not only facilitate circulation but also encourage social engagement and collaboration among students, fostering a sense of community and belonging within the college setting (Matthews et al., 2011). They can take various forms, such as corridors, atriums, and outdoor areas, each designed to promote a dynamic flow of people while also serving as

informal meeting points that inspire creativity and innovation (Dowdy, 2010). Effective design of these transitional spaces can significantly impact well-being of people, as they provide opportunities for relaxation, informal learning, and spontaneous interactions that enrich the experience (Nassar & El-Samaty, 2014). Creating inviting and functional transitional spaces requires careful consideration of factors such as lighting, acoustics, and accessibility, ensuring that all students feel welcome and included in these vibrant environments. Such thoughtfully designed spaces not only foster social connections but also encourage collaboration among people from diverse backgrounds, ultimately enhancing the overall sense of community in spaces (Nassar & El-Samaty, 2014).

These communal areas can also host events and activities that further strengthen relationships, providing a platform to engage with one another outside of the setting. By integrating flexible furniture and technology into these spaces, can adapt to various group sizes, promoting an inclusive atmosphere that caters to the needs of all participants (Benade, 2019).

1.3.4 Transitional Spaces in Architectural Colleges

Transitional spaces in architectural colleges serve as critical areas that facilitate movement and interaction among students, faculty, and visitors (Kray et al., 2013). These spaces not only enhance the flow of circulation within the campus but also foster collaboration and creativity, providing students with opportunities to engage in informal discussions and group work (Zhang, 2019). Designing these transitional spaces requires careful consideration of their layout, materials, and functionality to ensure they meet the diverse needs of the academic community while promoting a vibrant and inclusive environment (Irwin, 2015). Effective transitional spaces can also incorporate elements such as seating areas, greenery, and art installations, all of which contribute to a stimulating atmosphere that encourages socialization and learning (Magruder, 2011). Such thoughtfully designed environments can significantly impact the overall campus experience, making it easier for individuals to connect and share ideas while enriching their educational journey.

Recent Architects argued that using the design of transitional spaces can create an informal learning environment that is invaluable to the educational process. A

(Nassar et al 2014) in their study discusses the importance of transitional spaces in higher education buildings as student gathering areas to improve their interaction behaviour and improve their informal learning. Every type of space be it a courtyard, corridor, lobby, and atrium play an important role in designing. All these informal learning spaces serve as a destination for students to learn. Students choose to study in campus transitional space while waiting for the next lecture, before the start of the class, or after the class on the college campus (Oblinger, 2005). Students choose transitional spaces for their place of study because spaces are available with all infrastructure and enjoy studying because the atmosphere of transitional space is comfortable, quiet, and shady. Studying in campus transitional spaces, students feel free to explore informal learning (Ibrahim & Fadzil, 2013). These transitional spaces are mostly used for conducting various informal learning activities in colleges.

1.4 INFORMAL LEARNING ACTIVITIES IN ARCHITECTURE EDUCATION

Informal learning activities are essential for fostering creativity and critical thinking among students, as they provide opportunities to explore concepts beyond traditional classroom settings (Cross, 2006). These activities, which can include workshops, design jury, and site visits, encourage hands-on experience and collaboration, enabling students to apply theoretical knowledge in practical contexts. Such experiential learning not only enhances students' understanding of architectural principles but also cultivates a sense of community and teamwork, essential skills for their future careers in the field. By engaging in these informal learning activities, students can also develop adaptability and problem-solving skills, which are crucial for navigating the complexities of real-world architectural challenges (Koc & Ozdemir, 2020). These experiences help students to build a diverse portfolio, showcasing their ability to think critically and innovate, which can significantly enhance their employability in a competitive job market. In addition, these opportunities provide valuable networking connections with industry professionals, allowing students to gain insights into current trends and practices while fostering relationships that may lead to internships or job placements after graduation (Popescu & Diaconu, 2011). Such connections not only enrich the student's educational journey

but also empower them to enter the workforce with confidence and a deeper understanding of their chosen field. By engaging in hands-on projects and collaborative efforts, students can further refine their technical skills and creativity (Shieh & Chang, 2014). preparing them to tackle the evolving demands of the architectural profession. This proactive approach to learning equips graduates with a robust portfolio that showcases their abilities, making them stand out to potential employers who seek innovative thinkers capable of driving progress in the industry. Building a strong network within the architectural community can also open doors to mentorship opportunities, providing invaluable guidance and insights that help shape their career paths (Cheng et al., 2022).

Informal activities are generally designed to allow students to become more involved in campus. Often, such activities provide the students with opportunities to develop leadership, social responsibility, citizenship, volunteerism, and employment experience (Ibrahim & Fadzil, 2013). These informal activities are mostly conducted in transitional spaces to increase the informal learning of the students.

1.4.1 Informal Learning in Architecture

Informal learning in architecture refers to the spontaneous and unstructured ways individuals acquire knowledge and skills related to architectural design, theory, and practice outside of formal educational settings. This type of learning often occurs through hands-on experiences, community engagement, and personal exploration, allowing individuals to develop a deeper understanding of architectural concepts in real-world contexts (Kuyrukçu & Kuyrukçu, 2015). It encompasses a variety of activities such as visiting architectural sites, participating in workshops, collaborating on community projects, and engaging with local architects, all of which contribute to a richer, more practical comprehension of the built environment. This approach not only fosters creativity and innovation but also encourages a more inclusive understanding of architecture by integrating diverse perspectives from various cultural and social backgrounds (Zalloom, 2019). Such experiential learning opportunities empower individuals to challenge traditional notions of design and engage with their surroundings in meaningful ways, ultimately leading to more responsive and sustainable architectural solutions (Watkins et al., 2018). By

immersing oneself in these experiences, learners can cultivate critical thinking skills that allow them to analyze and address the complexities of contemporary architectural challenges. This hands-on engagement also helps bridge the gap between theoretical knowledge and real-world application, ensuring that future architects are well-equipped to tackle the evolving demands of society (Schugurensky, 2000). Through collaborative projects and community involvement, aspiring architects can gain valuable insights into the needs and aspirations of diverse populations, fostering a greater sense of empathy and social responsibility in their designs. This holistic approach not only enhances their technical skills but also encourages a mindset that prioritizes innovation and sustainability in every aspect of the design process (Riel et al., 2015).

1.5 NATIONAL EDUCATION POLICY (NEP 2020)

The National Education Policy (NEP) 2020 is a landmark reform in India's education system, aiming to transform the country's approach to teaching and learning across all levels of education (Lissen & Bautista, 2021).

The National Education Policy NEP (2020) for architectural education is yet to be finalized by Council of Architecture (COA). However, an overview of NEP 2020 is addressed below.

1.5.1 Over view of NEP 2020

NEP 2020, approved by the Union Cabinet of India in July 2020, marks the first education policy of the 21st century and replaces the previous National Policy on Education, 1986. The policy emphasizes the principles of equity, access, quality, affordability, and accountability in education, with a focus on holistic development and lifelong learning. NEP 2020 envisions a learner-centric education system that fosters critical thinking, creativity, innovation, and multidisciplinary learning.

Key highlights of NEP 2020 include the introduction of a new school curriculum framework, flexibility in subject choices, vocational education integration, promotion of regional languages, and emphasis on early childhood care and education. At the higher education level, NEP 2020 proposes reforms such as the establishment of a National Educational Technology Forum, accreditation reforms, autonomy for colleges and universities, and a multidisciplinary approach to undergraduate

education.

1.5.2 NEP 2020 Implications for Architectural Education

Multidisciplinary Approach: NEP 2020 advocates for a multidisciplinary approach to higher education, encouraging universities to offer flexible curricula that allow students to pursue diverse academic interests. This approach opens opportunities for integrating architecture with other disciplines such as engineering, environmental studies, sociology, and urban planning, enriching the learning experience and preparing students for interdisciplinary collaboration in practice.

Curriculum Reforms: The policy emphasizes the need for curriculum reforms to align education with the requirements of the 21st-century workforce. In architectural education, this may entail updating curricula to incorporate emerging technologies, sustainable design principles, digital tools, and contemporary architectural theories and practices (D. R. Singh, 2023). NEP 2020 encourages universities to review and revise existing curricula to ensure relevance, rigor, and responsiveness to industry needs.

Skill Development: NEP 2020 emphasizes the importance of skill development and experiential learning in higher education. In architectural education, this could involve incorporating practical training, internships, design studios, and collaborative projects into the curriculum to provide students with hands-on experience and industry exposure (H M Naveen, 2022). The policy encourages universities to forge partnerships with industry stakeholders to facilitate skill development and enhance students' employability prospects.

Research and Innovation: NEP 2020 emphasizes the promotion of research, innovation, and entrepreneurship in higher education. In architectural education, this may involve fostering a culture of inquiry, design research, and innovation within academic institutions accreditation (Saini, 2022). The policy encourages universities to establish research clusters, innovation hubs, and technology parks to support research and development activities in architecture and allied fields.

Professional Development: NEP 2020 underscores the importance of continuous professional development and lifelong learning (Gandhi, 2022). In architectural education, this could involve offering professional development

programs, workshops, seminars, and continuing education courses to practicing architects, faculty members, and industry professionals. The policy encourages universities to create mechanisms for accreditation, certification, and recognition of professional qualifications to promote excellence and accountability in architectural practice (Attia, 2019).

Overall, NEP 2020 presents significant opportunities for revitalizing architectural education in India, fostering innovation, excellence, and inclusivity in the discipline. By aligning with the principles and objectives of NEP 2020, architectural institutions can enhance their educational offerings, empower students with relevant skills and knowledge, and contribute to the advancement of the architectural profession in the 21st century (H M Naveen, 2022).

1.6 IMPORTANCE AND NEED OF STUDY

The study is essential to embrace informal learning experiences, architecture colleges can cultivate a dynamic educational environment that empowers students to think critically, experiment boldly, and develop a strong sense of professional identity. Such an environment not only enhances students' technical abilities but also prepares them to adapt to the ever-evolving challenges of the architectural landscape, ultimately leading to more resilient and versatile professionals.

The research specifically targets transitional spaces that serve as connectors or in-between spaces in architectural settings. These spaces are examined for their potential to facilitate informal learning activities. Further, the study focused on informal learning activities that occur in transitional spaces within architectural settings. This includes assessing how these spaces contribute to the learning experience, a pilot study was conducted. The details of study are as follows.

- **Pilot Study**

This study is conducted to identify the need for study, student’s preference for transitional spaces, and activities conducted in college transitional spaces. The result of this study will be used to determine the aim and objectives of the study.

- **Place of Study**

To accomplish the objective of the study, a case study was conducted by selecting Dr. D.Y. Patil College Architecture, Akurdi, Pune.

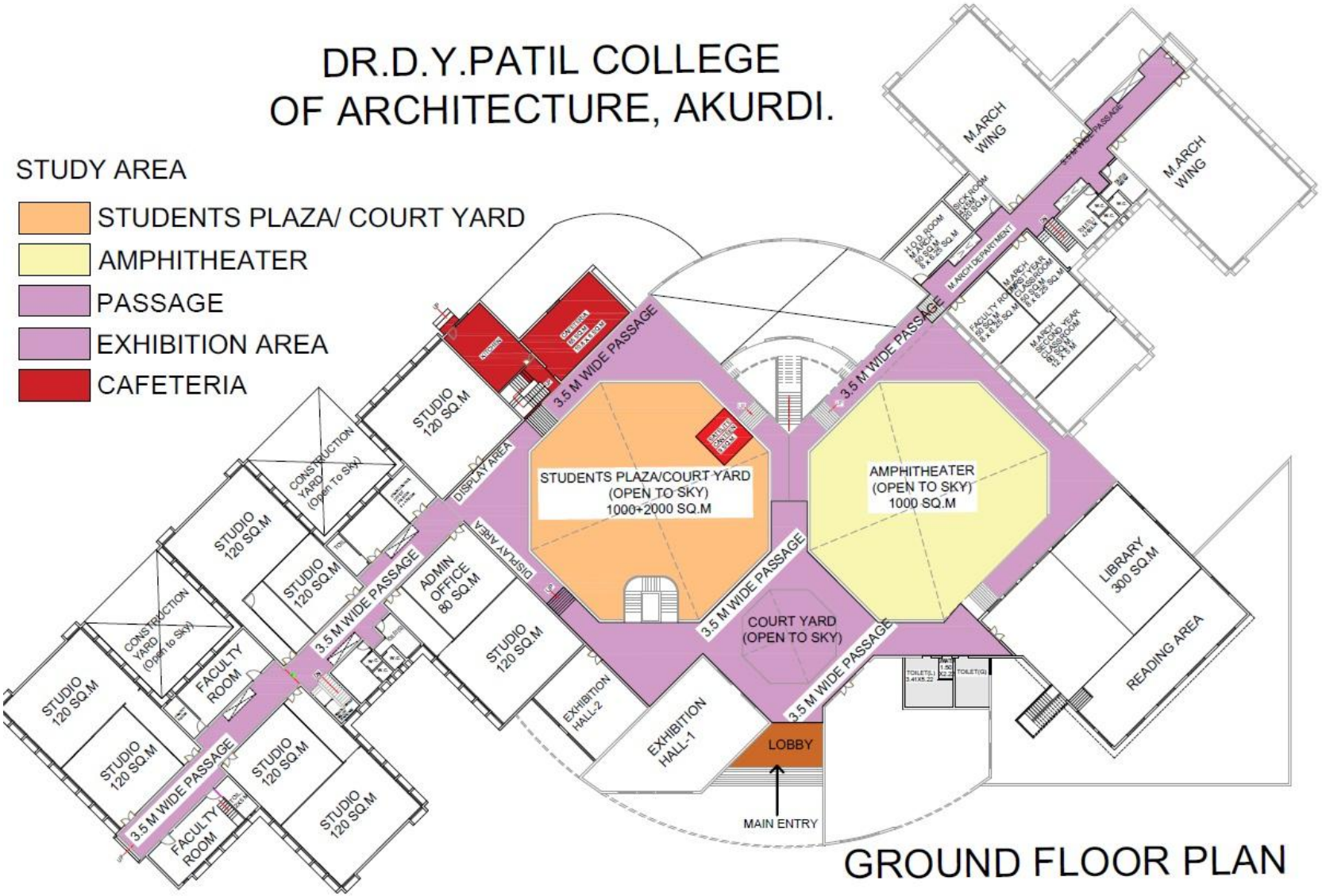

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Figure 1.2: Floor Plan of Dr.D.Y. Patil College of Architecture, Akurdi, Pune

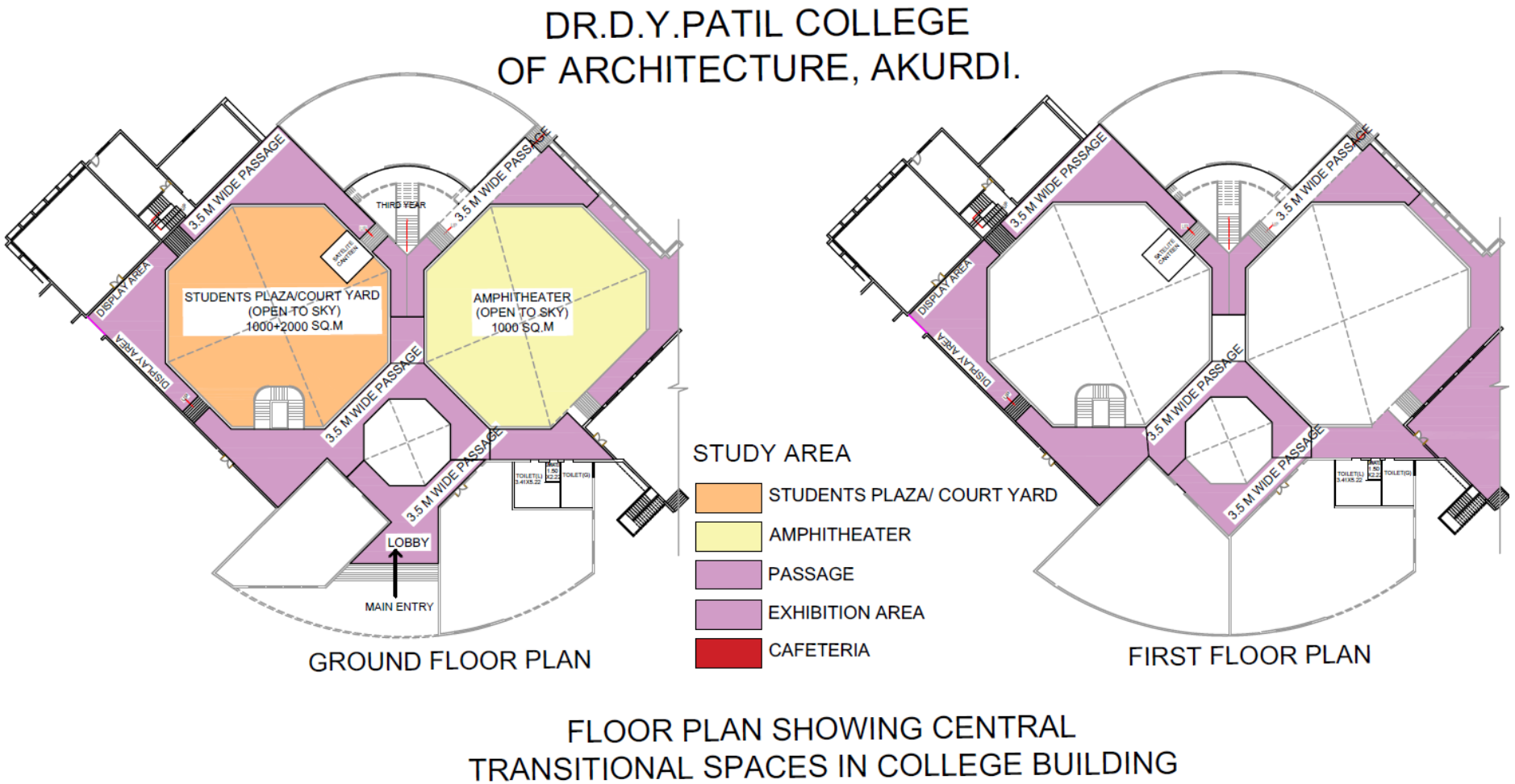

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Figure 1.3 : Central Transitional Spaces in College Building

- **Sample Selection**

The required information was collected by selecting 177 students enrolled in different years of degree programs. The selected sample is given below,

Table 1.1 : Sample Selection

Sr.No.	Year of Study	No. of Students	% of Total
1	1st Year	53	29.94
2	2nd Year	36	20.34
3	3rd Year	46	25.99
4	4th Year	27	15.25
	Total	177	100

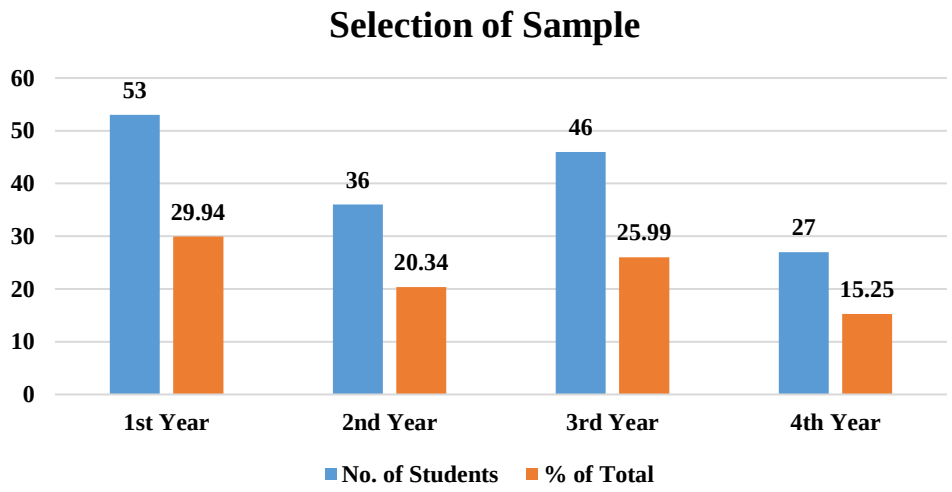


Figure 1.4 : Sample Selection

- **Analysis of Study**

By actively participating in the activities that occur in these spaces, an interactive space is critical in a student's life. The benchmark for a learner to investigate informally is a space where students can engage with one another. By cordial appreciation, a person acquires confidence, which helps develop their, personality. Appropriate infrastructure and informal seating arrangements in transitional spaces play an important role in encouraging students to visit these areas for group discussions. Relaxed surroundings provide a situation in which scholars feel more at ease and free to interact, thus increasing individual students' confidence levels.

- **Transitional Spaces**

The different types of transitional spaces identified and the area occupied by them are given below:

Table 1.2 : Type of Transitional space and area occupied

Sr.No.	Type of Transitional Space	Area Occupied	% of Total
1	Court Yard	2000 Sq.M	25 %
2	Passages	1000 Sq.M	12.5 %
3	Student plaza	1000 Sq.M	12.5 %
	Total area of college	8000 Sq.M	100 %

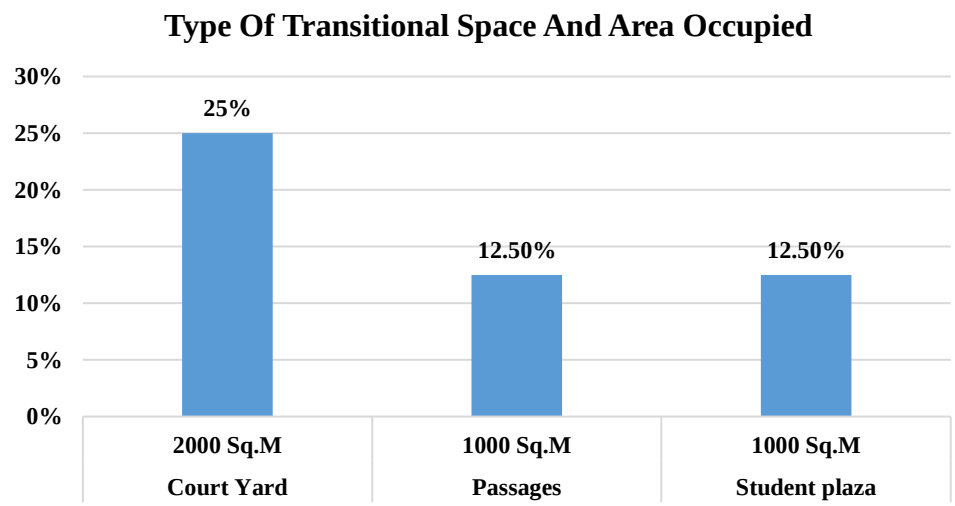


Figure 1.5 : Type of Transitional Space and Area Occupied

Note, Table 1.2 shows that out of the total area of college, 25% area is occupied by a courtyard followed by passages and student's plaza (12.5 %) each

- **Infrastructural Facilities**

The infrastructural facilities available in each transitional space are shown in Table 1.3

Table 1.3 :Infrastructure facilities in transitional space

Sr.No.	Infrastructure	Transitional Spaces		
		Courtyard	Passage	Student Plaza
1	Seating	50 Student	10 Student	30 Student
2	Paneling	18 panel	16 panel	18 panel
3	Notice board	Nil	Nil	Nil
4	Internet facility	Yes	Yes	Yes

- **Students Preference**

Students' preferences regarding the type of transitional spaces are given below:

Table 1.4 : Student's Preference Towards Transitional Space

Sr. No.	Type of Transitional Space	No of students	% Of Total
1	Court Yard	71	40.1 %
2	Passages	27	15.3 %
3	Student plaza	48	27.1 %
4	All above	31	17.5 %
	Total	177	100 %

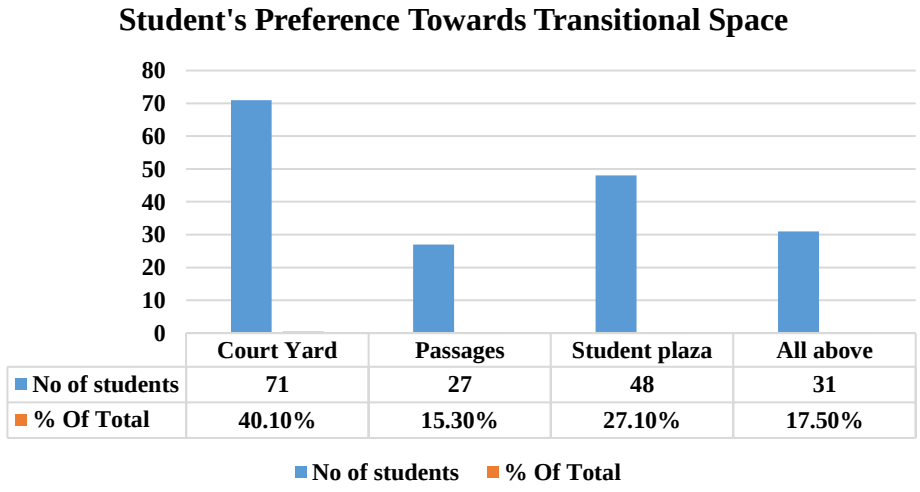


Figure 1.6: Student's Preference Towards Transitional Space

Note. It can be seen from Table 1.4 that 40% of students preferred courtyard followed

by the student's plaza (27.1%) and passages (15.3 %)

- **Activities Performed in Transitional Spaces**

The various activities performed in transitional spaces and the preferences of the students towards various activities are studied and presented in Table no 1.5

Table 1.5 : Activities Performed in transitional spaces and student Preferences.

Sr.No.	Activities	Students Performance	% To Total
1	Group Discussion	59	33.24
2	Presentation/ Jury	24	13.64
3	Students Meeting	38	21.48
4	Display of work	43	24.28
5	All Above	13	7.36
	Total	177	100%

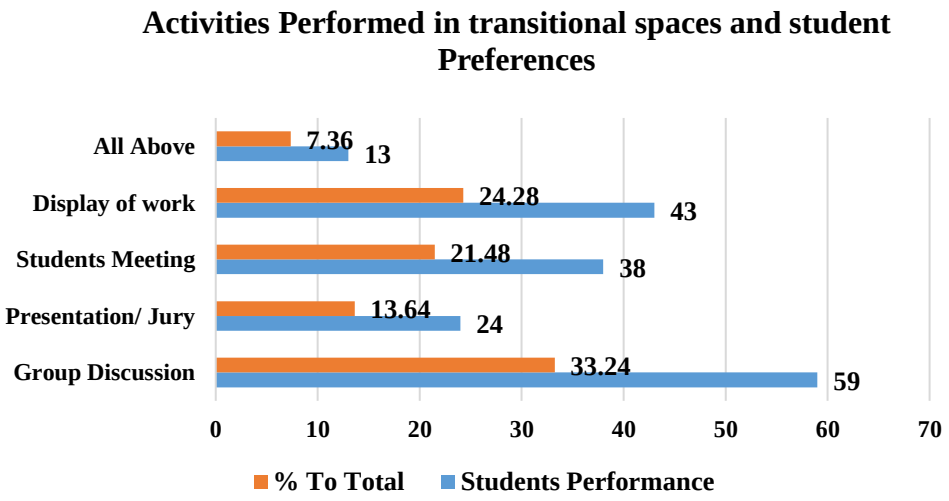


Figure 1.7: Activities Performed in transitional spaces and student Preferences

Note. Among the various activities conducted, 33.24% of the students preferred group discussion as an important activity in transitional spaces followed by a Display of work. (24.28%) and students meeting (21.48%).

- **Effect of Activities on Student's Informal Learning.**

To study the effect of activities on students' informal knowledge, some informal knowledge indicators were selected and students were asked to provide their preferences for these indicators. The student's responses are presented in Table 1.6.

Table 1.6 : Effects of activities conducted in transitional space on students informal learning

Sr.No.	Informal Knowledge indicators	% Improvement in Knowledge
1	Communication skills	72
2	Presentation skills	49
3	Group Discussion	71
4	Understanding skills	48
5	Personality Development	55

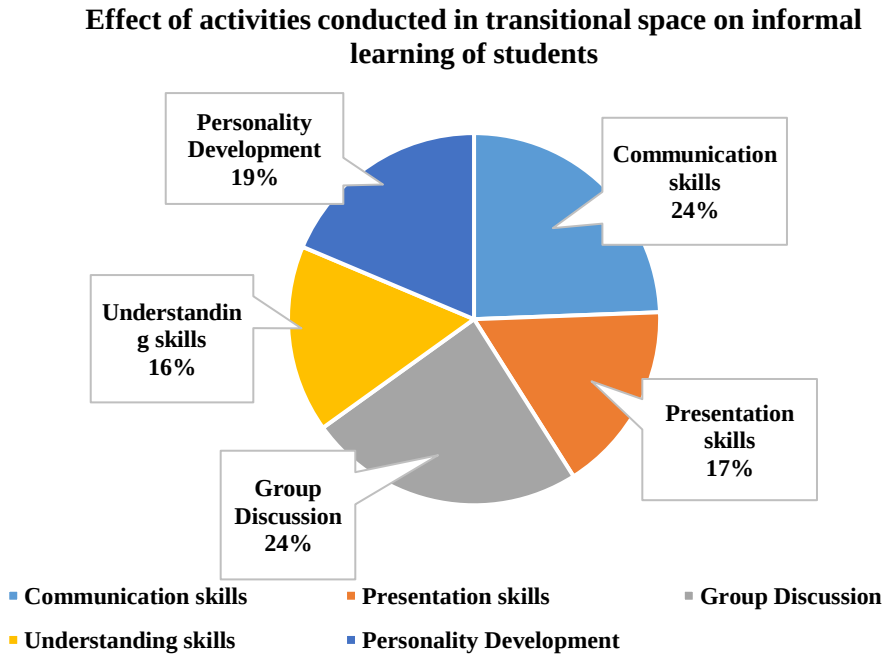


Figure 1.8 : Activities Performed in transitional spaces and student Preferences

Note. Table 1.6 shows that 72 % of the students explained that communication skills followed by group discussion (71%) and personality development (55%) improved due to different activities conducted in transitional spaces.

- **Observations of Pilot Study**

A pilot study was conducted by selecting Dr. D.Y. Patil College of Architecture, Akurdi, Pune has 177 respondent students studying in different years of the degree program. This study will help to provide information about the availability of transitional or informal learning spaces, informal learning activities conducted, and changes in informal learning,

The analysis shows that out of the total area of the college, 25% was occupied by a courtyard, followed by 12.5% each by passages and a student plaza as a transitional space.

The effect of informal learning activities conducted in transitional spaces on informal learning exhibited a positive increase in informal learning in communication skills, presentation skills, and personality development.

Informal learning activities, group discussions, student presentations, and work display were performed in transitional spaces.

The effect of informal learning activities conducted in transitional spaces on informal learning exhibited a positive increase in informal learning in communication skills, presentation skills, and personality development.

The majority of the students opined that various activities conducted in transitional spaces help to improve communication skills, presentation skills, and personality development.

Thus, looking at the observations of the pilot study and review, the study was undertaken with following objectives.

1.7 RESEARCH OBJECTIVES

1. To Identify the Parameters of Transitional Spaces and their characteristics.
2. To assess the Informal activities performed in Transitional Spaces.
3. To determine the effect of Informal activities performed on Informal learning of Students.

1.8 HYPOTHESIS

1. It is hypothesized that there are various types of transitional spaces in architecture colleges to facilitate learning.
2. It is hypothesized that various transitional spaces and activities performed, have variable effect on informal learning.

1.9 SCOPE AND LIMITATIONS OF STUDY

1.9.1 Scope of Study

The scope of present study is restricted to identifications of transitional spaces within the architectural college building, Informal learning activities and informal learning of students in terms of knowledge gain in transitional spaces of architectural colleges in pune. The study also encompasses establishment of relationship between various socio-economic and academic parameters of student's respondent with their gain in knowledge through informal learning activities in transitional spaces. The study is restricted two architectural colleges in pune university.

1.9.2 Limitation of Study

Owing to the limitations of time and manpower, the present study was restricted to length & breadth as indicated in scope of study. The study was restricted to transitional spaces available within the college building, the architectural institutions and the academic calendar also restricted the respondent's capacity for meaningful participation. Another constraint regarding the restricted area of study was the insufficient transitional spaces within most of the institutions and the restricted informal activities conducted therein.

In view limitation of the study AI, machine learning, Online learning, Mobile learning, e learning etc activities are not included in our research.

The study was limited to architecture education and hence only Architectural Colleges in Pune are consider in research.

The objective of research was only to consider transitional spaces within the building.

1.9.3 Research Question

The research question derived from study **"Can Activities conducted in Transitional Spaces in college building would enhance the student's Informal Learning?**

CHAPTER -2: REVIEW OF LITERATURE

Review of literature is very essential while conducting any research. The review of literature gives clear idea and makes well acquainted with the subject matter. While going through the literature come across with the methods & techniques used by previous researchers. The review of literature also gets knowledge about previous studies & their outcomes. The review thus helps the researcher to plan his research systematically in a methodical and reputable way. In this chapter, an attempt has been made to review the literature which had direct & indirect reference to the topic selected for study.

The aim of this review is to explore how various activities influence the informal learning experiences of students to contribute to a deeper understanding of how educational settings can be optimized to support diverse learning styles and promote lifelong learning skills among students. By prioritizing student-centered strategies, educational institutions can cultivate an atmosphere that values diverse perspectives and encourages active participation, thereby preparing learners for the complexities of a rapidly changing world. While Objective is to search for the untouched/ unanswered/ un-discussed areas in terms of cause and effect of activities on students informal learning. A research gap or research questions that can be dealt with during the further research.

The literature review for the research topic is presented in four sections. The first section includes review on “Exploring the transitional spaces & their characteristics in educational settings” second section includes “Transitional Spaces as an Informal Learning Spaces in college” third section covers “Architecture student’s informal activities in college transitional spaces” fourth section covers “Effect of Activities on Students Informal Learning.”

The review collected has been presented under the following heads and showed in flow chart.

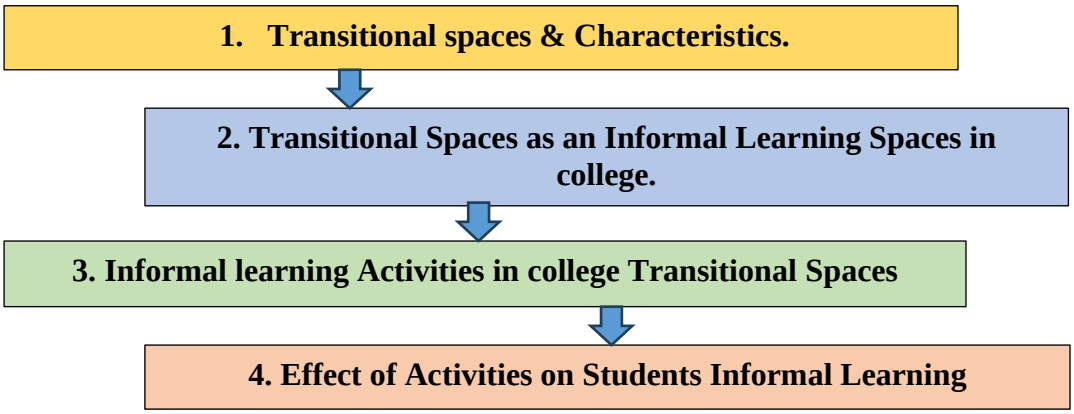


Figure 2.1: Review collected under heads

2.1 TRANSITIONAL SPACES AND CHARACTERISTICS.

The literature review exploring the concept of transitional spaces and their characteristics use in educational settings. It highlights the need for understanding student behavior and attitudes towards these spaces, particularly in the Indian context where limited studies have been conducted.

If we look at the definition of Transitional space, (Sprake & Thomas, 2007) discussed the concept of transitional spaces in the context of the college building refer to areas that are not formally presented to the public, allowing for exploration and interaction, reflecting the dynamic nature of the environment and the ongoing changes within the institution. The method used was micro mapping techniques for evidence of change. The finding of the study was museums are constantly changing environments for learning.

(Pitts et al., 2008) Transition spaces in college buildings refer to areas such as entrance foyers, lobbies, atriums, and corridors that facilitate movement between different environments, both exterior and interior, and often have distinct energy requirements due to their connection with external climate variations. The method use was analysis of occupants surveyed in transition spaces and discussion of comfort and energy use issues. The finding of study was wider comfort bands interpretation is possible and potential energy savings identified in transition spaces.

(Singh Kushwaha et al., 2008) BREAK" space, in architecture, refers to the

transition spaces which are connecting spaces between two confined spaces. The transitional spaces are a necessary part of any building whether it is a residential, commercial, educational, industrial, or any other form of structure. Moreover, the design of these transitional spaces can significantly influence user behavior and comfort, making it essential for architects and planners to consider their layout and purpose carefully.

(Hollway, 2011) Transitional spaces are defined as intermediate areas that serve as in-between spaces, facilitating the journey from one place to anot her. Unlike traditional definitions of spaces as strictly indoor or outdoor, transitional spaces enhance the pedestrian experience in urban environments by marking these areas as destinations. The research emphasizes the importance of these spaces in urban architecture, particularly in mixed-use developments, and aims to implement traditional elements of transitional spaces within contemporary urban contexts.

(Kray et al., 2013)Transitional spaces are defined as areas that exist between indoor and outdoor environments, challenging the traditional binary classification of spaces. These include locations such as tunnels, enclosed footbridges, and partially roofed courtyards. facilitating movement and interaction in complex urban landscapes, as explored in the study of pedestrian experiences. The method used was empirical study with 103 pedestrians in urban area. The empirical study supports characteristics and properties of transitional spaces.

(Nassar & El-Samaty, 2014) In their study discusses the essentiality of transitional spaces in Higher Education buildings as a part of student gathering areas to improve their interaction behavior and improve their informal learning. Furthermore, the design of these spaces should prioritize flexibility and adaptability, enabling students to utilize them for various activities, from group projects to quiet study sessions.

(Shahlaei & Mohajeri, 2015) studied the connections between both internal and outdoor Architectural spaces, with an emphasis on transformation, boundaries, and connectivity circumstances. This research aims to investigate the relationship between interior and exterior spaces in architecture, with a focus on transformation, border, and link conditions. The finding of the study stated that transitional spaces are essential components of architectural design, influencing how individuals

experience and interact with their environments. They are not just functional areas but also contribute to the aesthetic and cultural identity of a space.

(Thapa et al., 2016) In this study author expressed transitional spaces in college buildings refer to areas such as atria, lobbies, corridors, and covered streets that serve as connections between different functional with spaces Predicted Mean Vote (PMV) model which had its basis on the extensive climate chamber experiments is utilized to estimate the comfort condition for a building model. They typically account for 10 to 40% of the total building volume. The method used on-site questionnaire surveys and physical measurements coupling software techniques. The findings of the study were people adapt to thermal environments through self-adaptive actions and passive design improves comfort active systems needed in extreme conditions.

(Ribeiro et al., 2019) Transitional spaces are defined as "a space in between indoor and outdoor climate, or between two indoor environments, which thermal characteristics can be or not modified by mechanical control systems and where occupants may experience the dynamic effect of this change." These spaces play a crucial role in residential architecture, comprising 10% to 40% of the total volume depending on the building typology, and are significant for natural ventilation and mixed-mode building designs.

(Truong-Young & Hogan, 2020) Transitional spaces are areas within traditional architecture that serve multiple functions, such as climate control, family gatherings, and business support. They can be located at the front, back, or center of a house, fulfilling unique values that contribute to environmental, social, economic, and spiritual aspects. In the context of row houses in Saigon, these spaces are crucial for maximizing the built environment's potential, yet often face limitations in design and usage due to restricted areas.

(Puhakka, 2021) Reported the meaning of transitional spaces in college buildings and expressed that Transitional spaces are areas that lie between indoor and outdoor environments or between spaces with different functions. It is increasingly recognized that interacting with nature promotes well-being and health for both adults and children. They encourage exploration, collaboration, conversation, reflection, and meditation, contributing to the overall well-being of students in educational

settings. The findings show that most students have negotiated time and other constraints and maintained active participation in outdoor recreation. The nature can have an important role in students' well-being during a life stage loaded with stress.

(Fitria et al., 2022) Transitional spaces are defined as areas within urban villages, such as kampungs, that facilitate social interactions among residents amid spatial transformations, particularly due to tourism. These spaces are configured with local elements that reflect residents' territorial strategies, allowing them to maintain social connections and cultural practices. The study emphasizes that transitional spaces serve as microspatial environments crucial for community engagement, adapting to changes while fostering a sense of belonging and privacy among neighbors.

(Hashemi et al., 2022) Transitional spaces are complex spatial formations that serve as transition points between different areas, particularly from outside to inside in architectural contexts. They are characterized by their nature, character, morphology, and social significance influencing human perception and interaction. In the context of traditional dwelling units in India, these spaces are crucial for defining boundaries, enhancing security, and facilitating social connections, while also allowing for various activities and providing protection from environmental elements.

(Dash & Shetty, 2023) Transitional spaces are areas within buildings that facilitate connections between different parts, such as inside-inside or inside-outside relationships. They serve as a bridge between various functional zones, enhancing the interaction between the building's components and the urban context. The finding of the study suggest that these spaces have been identified as crucial for understanding the evolution of architectural patterns over time, influenced by local environmental, social, economic, and cultural factors.

(Salah El Samaty et al., 2023) Worked on Transitional spaces in college buildings and refer as areas that connect different functional zones, facilitating movement and interaction. These spaces often include corridors, lobbies, and stairwells, playing a crucial role in the overall visual and functional performance of the environment. The study revealed that glazed barriers enhance visual connectivity in transition spaces and improve functional performance in college building designs.

(Beckstead & Jordan, 2023) Transitional spaces, as discussed in the paper, refer to liminal and "in-between" zones such as paths, streets, and roads that facilitate movement and interaction between private and public settings. These spaces are characterized by their potentiality, allowing individuals to engage in dynamic political and social dialogues. They serve as areas where personal and collective narratives unfold, enabling both direct and indirect political participation, and revealing the complex interplay of power dynamics and meaning-making processes in human living.

(Galan et al., 2023) Transitional spaces are areas within architecture that serve as a bridge between different environments or functions, often reflecting the relationship between man-made structures and nature. The literature suggests that landscape is a complex and dynamic socio-ecological system, the management and adaptation of which requires systemic and integrative approaches to respond to a wide variety of drivers of change, challenges, and interests. They embody cultural significance and adapt to environmental contexts, facilitating a dialogue between the built environment and the surrounding landscape over time.

(Kavut & Tarakçi, 2023)Transitional spaces are defined as the areas that exist between virtual and real spaces, characterized by their flexibility, easy changeability, limitlessness, and timelessness. These spaces allow for mental experiences of transition before the physical construction of new buildings. They serve as a bridge in the planning process, enabling the exploration of design possibilities without the constraints of physical reality, thus facilitating adjustments and revisions that may be necessary before finalizing a project.

(Durrani et al., 2024) In their paper spaces are define as transitional spaces facilitate movement and interaction between different environments, serving as social interactive zones. They are designed to create neutral and safe zones for users, enhancing social engagement and connectivity within academic settings. The method use for analysis was modified design charrette to align with social measures. The study expressed the need for redesign of transitional spaces for better user engagement.

(Almeida et al., 2024) Transitional spaces are indoor areas that serve as buffers between a building's interior and exterior environments. These spaces are

commonly found in various types of buildings, including entertainment venues like theaters and tourist centers. They play a crucial role in providing comfort and facilitating movement, while also presenting challenges in maintaining thermal comfort. The study highlights the significance of understanding occupants' thermal requirements in these spaces to enhance their design and functionality.

(Durrani et al., 2024) Transitional spaces are areas within a built environment that serve as buffers between private and public zones, facilitating social interaction and movement. In the context of the research, these spaces are evaluated for their potential to function as "third-places," where users can engage socially. The study emphasizes the importance of site amenities and user preferences in designing these spaces to enhance their role as shared environments for both visitors and regular users, particularly in academic settings.

2.1.1 Characteristics of Transitional Spaces

Theoretical frame work for characteristics of transitional spaces showed in flow chart.

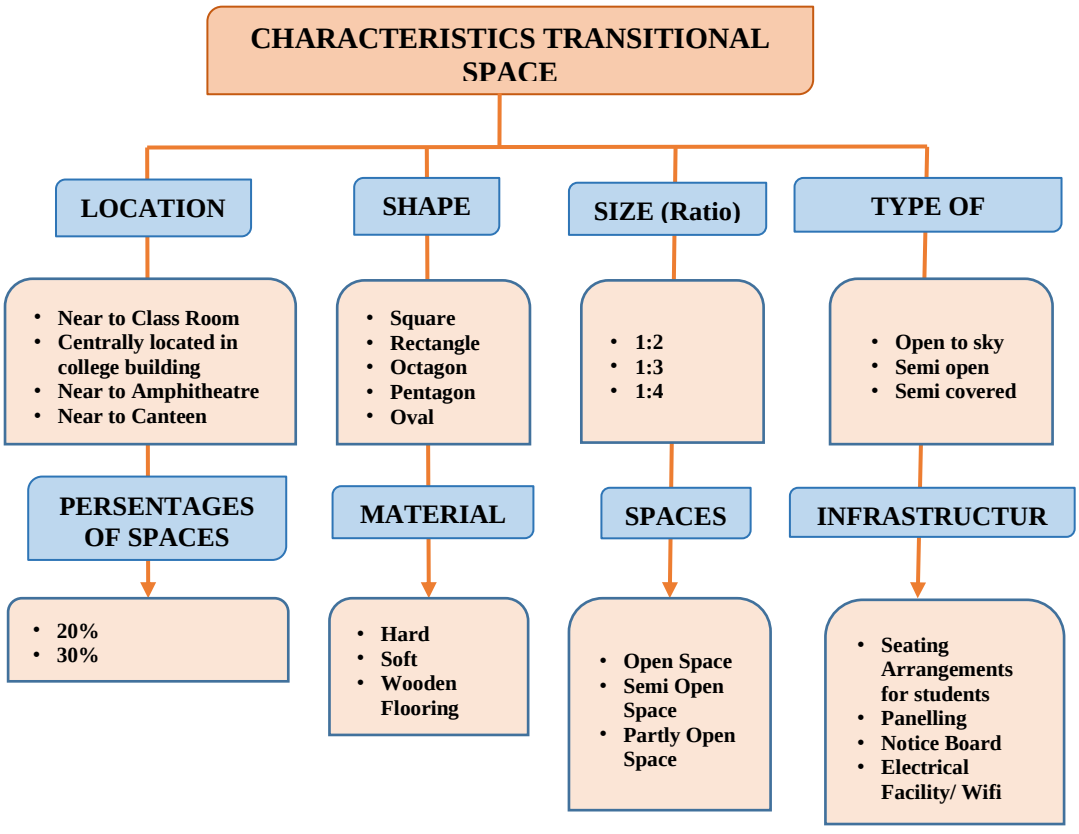


Figure 2.2: Flow chart of theoretical framework

Transitional spaces in architecture serve as critical connectors between different areas, facilitating movement and interaction while enhancing the overall flow of a building's design. Effective design of transitional spaces can greatly influence the user experience, as they often set the tone for how individuals perceive and navigate through a structure. Incorporating elements such as varied ceiling heights, strategic lighting, and engaging materials can further enhance these areas, making them inviting and functional while encouraging exploration and connection among occupants. This thoughtful approach to design not only prioritizes functionality but also fosters a sense of community, ultimately enriching the overall atmosphere and purpose of the building. By carefully considering the interplay between form and function, architects can create environments that not only serve practical needs but also inspire creativity and collaboration among users.

- **Centrally located**

(Slark, 1990) The paper discusses the transition of an entrepreneurship center from a business college to a centralized model under a campus-wide office of research and innovation. This centralization can enhance campus partnerships, connect the center with other centralized resources, and increase participation from a broader range of students and faculty. The chapter employs a qualitative case study approach to examine the transition of college to a centralized model under a campus-wide office of research and innovation. Study concluded that A centralized entrepreneurship center can increase participation from a broader range of students and faculty, fostering cross-college collaboration, although it may also lead to challenges such as potential disconnection from faculty research and curriculum development.

(Nassar & El-Samaty, 2014) Centrally located in transitional spaces in college buildings, these areas serve as vital social interaction zones, facilitating informal and diverse activities among students. They act as buffer spaces and physical links between indoor and outdoor environments, encouraging students to pause, rest, and engage with peers and professors. The design of these spaces must consider movement patterns and interaction distances to enhance communication and social relationships, ultimately contributing to a dynamic environment that supports the educational process. mindful design practices. The method was used in the paper employs an analytical approach to identify higher-education transition spaces

(HETS) as an efficient "behavior setting" model, focusing on the relationship between the physical environment and human behavior to enhance the design and utilization of these spaces. It concludes that the overall interactive performance of HETS is influenced by the interrelationship between various components of the transition space, including the physical arrangement, social rules, and the nature of activities occurring within these spaces.

(Peters & D'Penna, 2020)These spaces are designed to encourage exploration, collaboration, conversation, and reflection, enhancing the overall educational experience. Centrally locating these areas within higher education buildings allows for easy access and promotes social interaction among students, ultimately contributing to their mental well-being. Incorporating biophilic design in these transitional spaces can further enhance their positive impact on students' mental states. The finding of the paper discusses the concept of biophilia and its impact on mental well-being, highlighting the innate human tendency to connect with nature and how this connection promotes a healthy lifestyle suggesting that similar benefits could be realized in educational settings through

- **Near to Classroom**

(Hui & Jie, 2014) In their paper transitional spaces near classrooms in college buildings typically include corridors, stairwells, and foyers. These areas serve as buffers between the interior and exterior environments, influencing thermal comfort and occupant experience. The research highlights that these spaces can be semi-open or fully enclosed, affecting thermal conditions and subjective perceptions. The method used was the research employed a combination of theoretical study, survey questionnaires, and simple energy simulation to investigate the thermal comfort. The study found that transitional spaces, such as semi-opened and fully enclosed lift lobbies and corridors, exhibit different thermal responses due to their exposure to variable weather conditions.

(Durrani et al., 2024) Transitional spaces near classrooms in college buildings can serve as vital social interactive areas, aligning with Ray Oldenburg's "third-place" theory. The research emphasizes the need to modify these spaces to facilitate shared use by both visitors and regular users, creating neutral and safe zones. The research highlighted the importance of site amenities in determining the

modifications to these spaces, aiming to transform them into social interactive areas that align with the “third-place” concept.

- **Near to Amphitheatre**

(Pitts et al., 2008) The paper discusses transition spaces such as entrance foyers, lobbies, and corridors, which are relevant to areas near an amphitheater in a college building. These spaces serve as conduits between the exterior and interior environments, often experiencing higher energy demands due to external climate variations. The research indicates that transition spaces, such as entrance foyers and corridors, have higher energy requirements due to their connection with external climate variations, but they also present opportunities for energy savings by adjusting occupant comfort expectations.

(Islamoglu, 2016) The paper discusses transitional spaces as crucial elements in architecture, emphasizing their role in connecting different environments. In the context of a college building near an amphitheater, these spaces can serve as links between academic areas and communal gathering spots, facilitating movement and interaction. The research reflects on the complexity of these spaces, not merely as a transition from outside to inside through a facade, but as essential areas for reflection and preparation that contribute to the overall architectural experience and understanding.

(Durrani et al., 2024)The research emphasizes the importance of transitional spaces in academic settings, particularly near areas like an amphitheater. These spaces can serve as social interactive zones, aligning with the “third-place” concept. The design charrette participants suggested modifying these areas to enhance user experience, making them accessible and inviting for both visitors and regular users. By focusing on site amenities and user preferences, transitional spaces can effectively function as buffer zones, fostering social interaction and community engagement within the college environment. The research highlighted the importance of site amenities in determining the effectiveness of transitional spaces as “third-places.” This collaborative approach enabled users to envision future modifications to these spaces, aiming to transform them into social interactive areas that align with the “third-place” concept.

- **Canteen area**

(Tse & Jones, 2019) The paper evaluates thermal comfort in transitional spaces, which may include areas near canteens in college buildings. It highlights the importance of these spaces in providing comfort for users as they transition between different environments. The paper employs field studies conducted in Cardiff, UK, to evaluate thermal comfort in building transitional spaces, focusing on real-world conditions and user experiences. The findings indicate that the design and orientation of transitional spaces play a crucial role in thermal comfort, with recommendations for improving these areas to enhance overall building performance and occupant satisfaction.

(Johansson & Herz, 2019) The paper discusses spaces near the canteen in a college building, such transitional spaces may facilitate interactions among diverse subcultures, allowing students to engage in identity work and social dynamics. The paper discusses theoretical frameworks that connect transition theories with cultural studies, particularly focusing on the dynamics between subcultures and mainstream culture. The finding of the paper is the concept of transitional spaces, linking transition theories with cultural studies to explore how young people navigate their identities within subcultures and the mainstream, particularly in relation to education, employment, and intimate relationships.

- **Square shape**

(Xue et al., 2020) Square-shaped transitional spaces can enhance functionality and flow within educational buildings, facilitating movement between different areas. These spaces can serve as informal gathering spots, promoting interaction among students and faculty. The design of such spaces should consider natural light, accessibility, and integration with surrounding environments. The article highlights the evolution of modern forms and shapes (Square-shaped) of higher education institutions, emphasizing the importance of adapting architectural solutions to meet contemporary educational needs.

(Başaslan, 2022) The research paper emphasizes the importance of transitional spaces as intermediate areas that enhance pedestrian experiences in urban environments. These spaces can be designed in various shapes, including square, to facilitate movement and interaction within a college setting. Incorporating mixed-use areas in

such designs can further enrich the overall space, merging it effectively into its urban context. It proposes the implementation of design strategies that incorporate traditional elements of transitional spaces within contemporary urban contexts. The research identifies square shape transitional spaces as crucial intermediate areas that enhance the pedestrian experience in urban environments.

- **Rectangle**

(Tse & Jones, 2019) The paper evaluates thermal comfort in transitional spaces, including rectangular-shaped areas in college buildings. These spaces are crucial for facilitating movement and interaction while maintaining comfortable thermal conditions. The study highlights how design elements, such as orientation, materials, and ventilation, impact thermal comfort levels in these rectangular transitional areas. Data collection methods include the use of thermal sensors to measure environmental conditions and surveys to gather subjective feedback from occupants. The findings indicate that the design and orientation of transitional spaces play a crucial role in thermal comfort, with recommendations for improving these areas to enhance overall building performance and occupant satisfaction.

(Kariippanon et al., 2021) the paper discusses rectangle-shaped transitional spaces can serve as effective in-between areas, facilitating movement and interaction among students. These spaces can be designed to merge indoor and outdoor environments, promoting a seamless flow and enriching the pedestrian experience. By incorporating mixed-use areas within college buildings, such rectangular transitional spaces can contribute to a vibrant campus atmosphere, fostering social engagement and community interaction. The research involves an explorative study that focuses on identifying and defining transitional spaces, emphasizing their role in enhancing pedestrian experiences. The research identifies and defines rectangle transitional spaces as crucial intermediate areas that enhance the pedestrian experience in urban environments, emphasizing their role as destinations in the journey from one place to another.

- **Triangle**

(Nayeb & Tavşan, 2023) The paper "Triangle Constructions with Three Located Points" does not specifically address triangle shape transitional spaces in college buildings. It focuses on mathematical constructions related to triangles formed by

three points. For insights on architectural design or transitional spaces in educational settings. The paper discusses the construction of triangles using three specified points, exploring the geometric relationships and properties that arise from these constructions.

- **Octagon**

(Bird, 2011) In John Andrews's octagonal plans for college buildings, the octagon shape facilitates transitional spaces by co-locating areas of occupation with spaces of passage. This design employs diagonal axes to create a sense of movement and opposition, allowing for a dynamic interaction between different functions within the building. The paper analyzes John Andrews's octagonal plans by examining the relationship between a square and its diagonals, contrasting this approach with the traditional view of octagons as circle-based forms. This analysis highlights how the diagonal is used to symbolize movement and opposition in Andrews's designs.

(Salah El Samaty et al., 2023) The paper specifically addresses octagon-shaped transitional spaces in college buildings. It focuses on the impact of glazed barriers on the visual and functional performance of transition spaces using space syntax. While the study may provide insights into the design and effectiveness of various transitional spaces. The analysis using space syntax revealed that the presence of glazed barriers in octagon-shaped transitional spaces improves the spatial configuration and accessibility of transition spaces, leading to higher levels of pedestrian movement and interaction among users within the college environment.

- **Open to sky**

(Kray et al., 2013) The paper discusses transitional spaces, which include areas like open-to-sky courtyards that exist between indoor and outdoor environments. These spaces are characterized by their unique properties that facilitate pedestrian movement and interaction. The empirical study highlighted the significance of such spaces in urban landscapes, suggesting that they play a crucial role in navigation and user experience. Open-to-sky courtyards in college buildings can serve as effective transitional spaces, enhancing connectivity and providing a blend of indoor and outdoor experiences. The statistical and linguistic analysis of the study outcomes led to the identification of an initial set of characteristics and properties of transitional spaces, which can inform future research aimed at enhancing navigation support

through these unique areas.

(Nassar & El-Samaty, 2014) Open-to-sky courtyard transitional spaces in college buildings serve as vital environments that facilitate social interaction and enhance the educational experience. These spaces act as buffers between indoor and outdoor areas, promoting informal gatherings and diverse activities. Their design should consider movement patterns and interaction distances to foster communication among students and faculty. By creating dynamic environments, these courtyards encourage longer stays and engagement, ultimately contributing to the overall performance and effectiveness of higher-education transition spaces. The paper employs an analytical approach to identify higher-education transition spaces (HETS) as an efficient "behavior setting" model. It concludes that the overall interactive performance of HETS is influenced by the interrelationship between various components of the transition space, including the physical arrangement, social rules, and the nature of activities occurring within these spaces, which collectively contribute to a dynamic environment that encourages prolonged engagement and interaction.

- **Semi open space**

(Hui & Jie, 2014) Semi-open transitional spaces in college buildings, such as lift lobbies and corridors, serve as buffers between interior and exterior environments. These spaces are influenced by variable weather conditions and can impact occupants' thermal comfort. The research indicates that people in these areas can tolerate a wider range of thermal environments, influenced by factors like clothing, activity level, and past experiences. Understanding these dynamics is crucial for improving design guidelines and enhancing energy efficiency in educational facilities. The study found that transitional spaces, such as semi-opened and fully enclosed lift lobbies and corridors, exhibit different thermal responses due to their exposure to variable weather conditions.

(Huldiansyah et al., 2022) The landscape design for College Building at Institute Technology Kalimantan incorporates multifunctional spaces, which include semi-open and transitional areas. These spaces are designed to facilitate interaction and movement between indoor and outdoor environments, enhancing the overall campus experience. By integrating public and green spaces, the design promotes

educational, recreational, and aesthetic activities, creating harmonious environments that encourage student engagement and improve their quality of life. This approach emphasizes the importance of transitional spaces in campus functionality. This study highlights the role of integrated, semi open space campus spaces in creating a unique and dynamic educational environment.

- **Soft Material**

(Chen & Wang, 2013) The indoor soft floor tile described in the research paper is an ideal choice for transitional spaces in college buildings. It features a multicolor multi-pattern PVC sheet layer for aesthetic appeal, a waste rubber particle backing for durability, and is solidified with polyurethane adhesives. This flooring solution is waterproof, cost-effective, easy to install, and offers a soft texture similar to carpet, making it suitable for high-traffic areas while providing an attractive and elegant appearance. The final product that has a softness similar to carpet and the bright colors and patterns of marble and ceramic floor tiles which are waterproof performance, aesthetic appeal, low cost, ease of construction, recyclability, and a softness comparable to carpet, along with vibrant colors and patterns.

Wang, Zhijian. (2016) Floor tile described in the research paper is suitable for transitional spaces in college buildings due to its excellent waterproofing performance, abrasion resistance, and environmental friendliness. Composed of various materials like limestone, loess, and polycarbonate, it offers low cost and scratch resistance, ensuring longevity and durability. This makes it an ideal choice for high-traffic areas, as it can withstand wear and tear while maintaining its aesthetic appeal and functionality over time. The findings of study were tile is environmentally friendly and cost-effective, featuring advantages such as scratch resistance and durability, which contribute to an extended service life without easy destruction.

(Besson & Lieux, 2018) The paper discusses a cloth fabric that could be suitable for transitional spaces floor in college buildings. This fabric features a polyurethane film and layers of linen and ramie fibers, providing a soft texture and durability. Its design overcomes issues like contamination, unattractiveness, and rigidity, making it an ideal choice for flooring in high-traffic areas. The fabric's easy rollability also enhances its practicality for installation and maintenance in transitional spaces.

- **Infrastructure**

(Ramu et al., 2018) this paper investigated that Transitional spaces should include access to IT resources, technology-enabled environments, appropriate furniture, and power plug sockets to effectively support informal learning activities among students. These spaces should facilitate both individual and collaborative learning activities, providing a conducive atmosphere for various types of learning. Additionally, the design should consider environmental factors, ensuring comfort and usability, while avoiding negative aspects such as pest issues, as highlighted by students' experiences in specific areas like gazebos near rivers. The research highlights the importance of transitional spaces in educational environments, suggesting that these areas can be effectively utilized as social learning spaces (SLS) that enhance student engagement and facilitate collaborative learning among peers.

Andrew, Cox. (2018) The research highlights that transitional spaces should incorporate diverse learning atmospheres that cater to multi-sensory experiences. Features such as flexible seating arrangements, collaborative work areas, and quiet zones are essential. Additionally, these spaces should facilitate social interaction, allowing students to work alongside companions, which enhances motivation. The design should encourage active construction of the learning environment by the students themselves, making these spaces not just functional but also inviting and adaptable to various informal learning activities. The findings indicate that informal learning spaces should be designed to support multi-sensory experiences, allowing students to actively construct their learning environments. This implies that educational institutions need to consider the preferences and behaviors of students when planning these spaces, ensuring they cater to the social and motivational aspects of learning.

Wiwel et al. (2019) Transitional spaces should include features that encourage collaboration and flexibility, such as reconfigurable furniture, moveable whiteboards, and large monitors. These elements facilitate group work and communication among students, allowing for various room layouts to accommodate different activities. Comfortable seating and increased whiteboard space are also essential to support informal learning. By incorporating these affordances, transitional spaces can effectively enhance student collaboration and informal learning experiences outside

of formal classroom settings. Observations indicated that the flexible classroom was actively used outside of class time, with a maximum of 32 people utilizing the space simultaneously, demonstrating its effectiveness in accommodating various informal learning activities, including group study sessions and project team meetings.

Catherine et.al. (2021) The paper emphasizes that key design considerations for transitional spaces in college buildings include creating flexible, adaptable environments that encourage interaction and collaboration among students. Incorporating informal learning areas, natural light, and comfortable seating can enhance user engagement. Additionally, integrating technology and providing access to resources within these spaces fosters a sense of community and supports diverse learning styles, ultimately promoting a more engaging and effective educational experience. The paper discusses how evolved design theories of student learning are influencing the architectural design of university spaces, particularly in creating informal learning environments that foster user engagement.

(Wu et al., 2021) The research identifies six significant design characteristics that transitional spaces should include to effectively support informal learning activities among students: comfort, flexibility, functionality, spatial hierarchy, openness, and other support facilities. These features enhance student preferences and usage of informal learning environments, allowing for a more enriching learning experience. By incorporating these characteristics, higher education institutions can create spaces that foster collaboration, creativity, and engagement among students, ultimately improving their overall educational experience. The study identifies understanding how spatial design characteristics shape students' preferences and activities within informal learning spaces can help institutions optimize the design of such spaces to enhance student experiences and learning outcomes.

- **Open space**

Abu-Ghazalah and Al-Goussous (2009) The paper discusses the importance of academic open spaces, such as the main square at Ira university, which serve as transitional spaces guiding student movement and interaction. These spaces are often designed as leftover areas between buildings, impacting social behavior and navigation. The study emphasizes the need for improved design quality and spatial features to enhance wayfinding and user experience, highlighting that effective

transitional spaces can facilitate better social interactions and overall satisfaction among students. The study found that wayfinding in the Main Square can be significantly improved by enhancing the spatial quality of the open space through effective signage systems, new landmarks, and redesigning the boundaries and heights of the surroundings. The absence of distinct landmarks negatively impacts students' ability to navigate the space, as evidenced by the low percentage of first-year students who could recognize landmarks or plan their way mentally before entering the Main Square.

(Sprake & Thomas, 2007) The research highlights the importance of creating semi-open spaces within college buildings that facilitate students' engagement in transitional activities. Such environments allow for academic play, where students can explore sameness, uncertainty, and change. These spaces should provide the freedom to experiment and collaborate, fostering resilience and adaptability. The study emphasizes that the effectiveness of these semi open transitional spaces depends on the balance between supportive teaching and student’s willingness to engage, ultimately enhancing their academic and personal development during their transition.

La Fua et al. (2022) The paper specifically addresses green open space transitional spaces in college buildings. However, it emphasizes the importance of green open spaces on the IAIN Kendari campus, highlighting their role in providing comfort and supporting academic activities. These spaces can serve as transitional areas that enhance the overall campus environment, promoting interaction and relaxation among students, lecturers, and employees, ultimately contributing to a more conducive academic atmosphere. The study highlights the importance of green open spaces in enhancing the comfort and well-being of the academic community at IAIN Kendari, suggesting that these spaces can be effectively utilized to support and improve academic activities for students, lecturers, and employees.

2.1.2 Observations and Inferences on Transitional Spaces and Characteristics

Transitional spaces are architectural elements that serve as intermediary zones between different environments, such as the interior and exterior of a building, or

between distinct functional areas within a structure. Transitional spaces are integral to architectural design, offering functional, aesthetic, and cultural benefits. The literature emphasizes that transitional spaces are crucial for fostering student interaction. They provide informal settings where students can engage with one another, which is essential for informal learning. transitional spaces are essential for enhancing the educational experience in colleges. Their characteristics significantly influence student interaction and informal learning, underscoring the need for thoughtful architectural design that prioritizes these spaces in educational institutions. Transitional spaces are found in various forms and serve multiple purposes, depending on the context and design intent.

Transitional spaces are defined as the areas that exist between indoor and outdoor environments, serving as a bridge that connects these two distinct realms. The study of these spaces reveals a set of characteristics and properties that help clarify their unique nature. These characteristics include their architectural design, functionality, and the sensory experiences they provide. One notable aspect of transitional spaces is their emphasis on comfort. The design of these areas prioritizes inviting environments, often featuring ample seating that encourages relaxation while maintaining a polished aesthetic. This focus on comfort is crucial, as transitional spaces are influenced by outdoor climate conditions yet are architecturally bounded by a building, creating a unique challenge for thermal comfort standards. In terms of aesthetics, transitional spaces often utilize a neutral color palette, incorporating shades like tans, and whites. This choice of colors helps evoke a serene atmosphere, making these spaces feel welcoming and harmonious. Additionally, the design style of transitional spaces blends traditional and modern elements, creating a timeless appeal that resonates with a wide audience. Balance is another key characteristic of transitional spaces, where designers strive to harmonize masculine and feminine elements. This balance contributes to a cohesive aesthetic that enhances the overall experience of the space. Furthermore, the use of transitional fabrics, which are often tonal and textural, adds depth to the design without overwhelming the senses. Lighting also plays a significant role in transitional spaces. Modern lighting fixtures are frequently incorporated to contrast with traditional elements, adding a contemporary touch that enhances the overall ambiance. The design philosophy of

transitional spaces often embraces a minimal accessories approach, favoring a less-is-more strategy that maintains visual interest while avoiding clutter. In summary, transitional spaces are characterized by their unique blend of comfort, aesthetic balance, and thoughtful design elements. By understanding these characteristics, designers can create environments that not only connect indoor and outdoor areas but also provide a serene and inviting experience for users.

2.2 TRANSITIONAL SPACES AS AN INFORMAL LEARNING SPACES IN COLLEGE

Transitional spaces in college settings play a significant role in facilitating informal learning among students. These areas, which include courtyards, corridors, lobbies, and atriums, serve as vital gathering points that enhance student interaction and learning experiences. Transitional spaces are crucial informal learning environments in colleges, promoting student interaction and engagement. Their thoughtful design can significantly enhance the learning experience, making them an essential consideration in educational architecture.

(Hoekstra et al., 2009) The author evaluated changes in attitudes and behavior toward students' active and self-regulated learning (ASL) and their connections to instructors' learning activities in this study on 32 teachers learning in an informal learning environment. The findings indicated a significant positive shift in both student engagement and instructor responsiveness, highlighting the importance of fostering an atmosphere that encourages exploration and autonomy in learning.

(Riddle & Souter, 2012) creating informal learning spaces from the perspective of students. As a result of these processes, La Trobe University, in Victoria, Australia, was able to design a series of new informal learning spaces. These spaces include comfortable seating arrangements, access to technology, and areas for group work, all of which contribute to a more collaborative and interactive learning environment. These innovations have not only improved student satisfaction but also fostered a sense of community among learners, ultimately leading to enhanced academic performance and retention rates. Furthermore, the university has implemented feedback mechanisms to continuously adapt these spaces based on student needs and preferences, ensuring that the learning environment evolves

alongside educational trends.

This research underscores the necessity of creating supportive frameworks that not only facilitate academic success but also empower students to take ownership of their educational journeys. The classroom was the primary location of learning in higher education a decade ago. However, the internet and its accompanying network-based applications have transformed learning in ways that have shifted learning away from the classroom, library, or faculty office and into a variety of learning spaces (Dabbagh & Kitsantas, 2012).

(Mohammad et al., 2012) When it comes to energy efficiency and indoor comfort, a courtyard is the least energy-efficient style of residence in the Netherlands, whereas an atrium is more energy-efficient. Furthermore, a sunspace is not recommended for the hotter climates of Cairo and Barcelona due to the risk of overheating during the summer. According to the paper, even if a building type is inefficient in terms of energy. This study, four different building types were modeled and simulated in three different climates using Design Builder. The energy consumption of the dwellings is calculated using these simulations. Aside from that, the indoor temperature data was plotted on temperature boundary charts. As part of the campus design process, landscape and outdoor behavioral studies should be incorporated to create transition spaces and common open spaces.

(Harrop & Turpin, 2013) tried to explain the design of informal space from learning theory in higher education within and outside of the academic library. The study's findings point to the creation of a typology of learning space preference that may be utilized for influencing informal learning space design. Researchers looked at how informal learning environments may increase students' involvement in their coursework.

(Ibrahim & Fadzil, 2013) reported that using a student questionnaire survey, it was possible to gather information about the learning activities and space usage of students while they were not in class. The survey was completed by a student from each of the four academic enrolment groups. To determine informal learning space utilization and preferences depending on space type and qualities, the survey data was statistically analyzed. Finally, it is concluded that on-campus environment for informal learning is a crucial topic to investigate further since it has the potential to

enhance university development.

(Hanan, 2013) Studies the use of various campus open spaces and identifies the essential features that make the space meaningful for informal learning students are the focus of this research. First-year students occupy most of the campus's open spaces, according to the results. For students, planning around the axis creates a sense of place and uniqueness that they can relate to. Student plazas, courtyards, pedestrian walkways, building corridors, and verandas on campus are all examples of meaningful open spaces on campus. Circulation, service, and open space systems can be incorporated into campus design to facilitate student learning.

(Baker, 2014) This article investigates postgraduate student-teacher perceptions of the educational value of learning in informal settings at KidZania, a well-known global educational center in Dubai, United Arab Emirates. It offers an interpretive analysis of student-teacher reflections in online reflective discourse communities that use a connect–extend–challenge model. According to the findings, students identified some advantages and disadvantages of learning in an informal setting. Students were eager to transfer good practices learned in the informal setting to the classroom, but they reflected on how their practicum experiences had revealed some factors that could stymie progress. As a result of the findings, recommendations are made to alleviate the constraints that have been identified and to provide children with more opportunities for informal and formal learning.

In a research paper by (Kumar & Bhatt, 2015) on the use of Informal learning spaces at I.I.T., Delhi, it was reported that these spaces are mostly used for academic purposes during relaxation time. Additionally, the researchers noted that the design and layout of these informal learning spaces significantly influence student behavior and engagement, encouraging a more dynamic approach to education.

(Waldock et al., 2017) explored that student viewpoints to create an empirical basis and straightforward fundamentals of learning space designs are useful ways for social interaction. The study is to make environments that encourage interpersonal communication inside and throughout year gatherings, nearer causal relations between faculty and students, and endorse classwork operations, especially group activities, all encouraged. Such areas maximize time by motivating students to remain collaborate.

(Finkelstein et al., 2016) looked at how space affects the learning environment and explained how space is crucial to the educational experience of students. Because learning spaces are the future to facilitate teaching and learning, design decisions must be guided by sound pedagogical principles. Learning environments must be designed to encourage and support behaviors that endorse student learning. Such designs should be incorporated into institutional-level strategic directions for teaching and learning.

(Hasriyanti et al., 2018) A rationalistic study was used as the research method to examine the setting of the collective space concept among students. The planned activities included determining collective space (inside and outside), building and space character analysis, as well as space entity and movement, area analysis phase, information and color assessment, site analysis, and both internal and external space. The findings revealed significant insights into how students interact with their environments, highlighting the importance of both physical and social dimensions in shaping collective spaces.

(Anggiani & Heryanto, 2018) studied students' preferences for informal learning environments and public areas, researchers found that these settings significantly affect both teaching and learning. These areas include educational support amenities including hallways, libraries, patios, and cafeterias with student assistance systems for unstructured study. People feel freer to explore learning in informal college settings because they can engage with coworkers, browse for educational resources, do college tasks, and do anything else that cannot be done in a conventional classroom setting.

(Morieson et al., 2018) suggested developing a strategy for engaging students in spaces, promoting the purposeful use of the spaces for key transition and cohort activities and recommended that students use these spaces for a range of activities and feel a sense of ownership over their development. Studies have shown that the presence of well-designed transitional spaces correlates with higher levels of informal learning and student engagement. Students who frequently utilize these spaces tend to perform better academically, as they benefit from the collaborative learning opportunities, transitional spaces are vital for promoting informal learning in college settings. By facilitating interaction and collaboration among students, these

spaces enhance the educational experience and contribute to improved learning outcomes. Their thoughtful design and strategic placement within college campuses can significantly impact student engagement and success.

(Zhang, 2019) this study aimed at the number of informal learning environments on college campus projects that are newly built or refurbished has increased all over the higher educational industry in Australia and globally. The importance of spatial configuration design in informal learning spaces is under appreciated in research, as is how the layout features of an unstructured learning segment may affect students' selection of preferred places.

Hudson et al. (2019) Learning is the main activity in colleges and universities. This learning can take place in formal settings like institutions at times, or it can happen informally via random interactions between individuals. Physical or virtual places can have an impact on learning. It can bring together individuals and promote investigation, collaboration, and debate. Alternatively, Unspoken messages of quiet and detachment can be conveyed through space.

Maina and Ibrahim (2019) The purpose of this study was to examine student perspectives on the use of informal space in formally designed educational infrastructure on campus to help shape future technology policies. The results show that the design ILS was used in breakout areas such as hallways, foyers with a strong relationship between spatial use and hours spent in them.

(Wu et al., 2021)The utilization of foyers by students for informal active the process of learning typical architecture and design techniques in modern higher education facilities, with rising land costs, moderate schools and universities are neither financially nor ecologically viable in several densely populated areas. Atrium are increasingly being used as an architectural strategy in multi-story education buildings to encourage social education environments.

2.2.1 Observation and Inferences on Transitional Spaces as an Informal Learning Spaces

Transitional spaces in colleges serve as vital informal learning environments that complement formal educational settings. These spaces, where different realms meet, are crucial for fostering informal learning through activities such as debates,

discussions, and group work. The design and utilization of these spaces significantly impact the educational experience by promoting collaboration, creativity, and community engagement. The effectiveness of transitional spaces in enhancing informal learning is influenced by various factors, including spatial design, accessibility, and user preferences. Below, the key aspects of transitional spaces as informal learning spaces in colleges are explored. High accessibility and visibility in transitional spaces increase the probability of informal learning behaviors, as these attributes encourage frequent use and interaction among students.

2.2.2 Challenges and Considerations

Despite their benefits, transitional spaces face challenges such as the need for clear design standards and guidance to optimize their use for informal learning. The impact of external factors, has highlighted the need for adaptable and resilient design strategies for transitional spaces to maintain their functionality as informal learning environments. Gender dynamics and social norms can also influence the use and effectiveness of transitional spaces, necessitating thoughtful design and policy considerations to ensure inclusivity. While transitional spaces offer significant potential as informal learning environments, their success depends on thoughtful design and alignment with user needs.

In summary, transitional spaces are integral to the informal learning landscape of college campuses. They provide essential opportunities for social interaction and collaborative learning, which are crucial for student development. By understanding the spatial design characteristics and their impact on student behavior, educational institutions can enhance these transitional areas to better support informal learning and foster a vibrant academic community. As campuses continue to evolve, prioritizing the design and functionality of transitional spaces will be key to promoting effective informal learning experiences among students.

2.3 INFORMAL LEARNING ACTIVITIES IN COLLEGE TRANSITIONAL SPACES

Theoretical frame work for Informal learning activities showed in flow chart

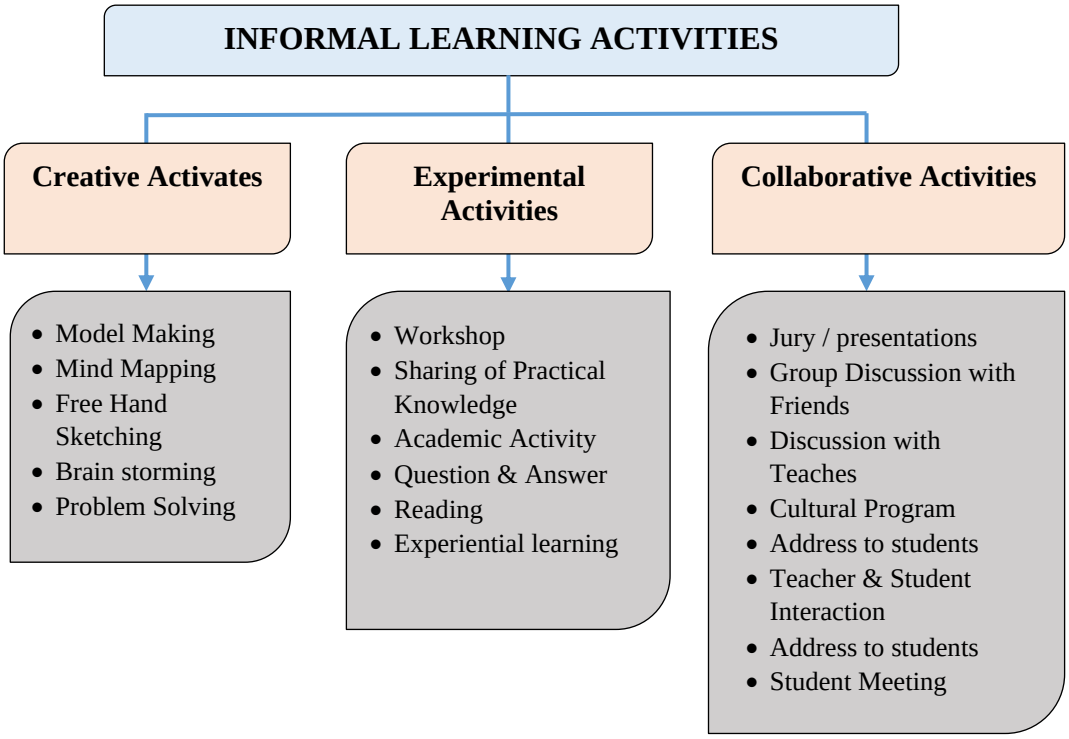


Figure 2.3 : Flow chart of Theoretical frame work for Informal learning activities

Research conducted within the field of architectural education has consistently indicated that the deliberate incorporation of informal activities within transitional spaces plays a pivotal role in significantly enhancing the overall learning experiences of students, thereby fostering a more holistic educational environment. This particular pedagogical approach not only permits students to immerse themselves in practical, real-world contexts that serve to complement and enrich their formal educational curriculum but also encourages a deeper understanding and application of theoretical knowledge in tangible settings.

Jeremy, Ham. (2003) The paper concludes that the integration of music into architectural education can provide a rich, authentic learning experience that enhances creativity and engagement among students. Integrating music into architectural education can enhance creativity and provide a valuable learning

experience. The project demonstrated that music and architecture share similarities in compositional and design processes, which can be explored through educational activities like the 'Game' and design projects. The project highlighted the potential for integrating music into architectural design processes, even within early-year design studios.

(Erktin & Soygeniş, 2014) The study found that informal learning environments significantly enhance architecture students' sketching and perception skills. This improvement allows sketching to serve as a mode of thinking and a means of expressing design ideas and decisions. The advantages of using informal learning settings, particularly urban environments, for architecture students. Engaging with the city provides hands-on experiences and a continuous flow of information, which is crucial for analysis and abstraction. Study employed a mixed-method approach, combining quantitative analysis of pre- and post-instruction sketches with qualitative evaluations. These conclusions collectively underscore the importance of integrating informal learning experiences into architectural education, highlighting their potential to enrich students' skills.

(Babu, 2017) Informal learning activities in college transitional spaces, such as hostels, occur through student mobilizations and interactions that challenge societal norms. These spaces facilitate conversations and collective actions that address issues like caste and gender discrimination, allowing students to learn from each other. Such informal learning is significant as it questions hegemonic practices within educational institutions and fosters new pedagogic possibilities, ultimately contributing to a broader understanding of social dynamics and empowering students to navigate their social worlds effectively.

Terry, Sefton. (2018) Informal learning activities in college transitional spaces, as discussed in the paper, occur outside traditional classroom settings, allowing for fluid roles between students and faculty. These activities include collaborative workshops and performances in music and dance, where participants engage voluntarily, fostering peer-to-peer learning and creativity. The absence of formal assessment and structured goals encourages exploration and risk-taking, creating an environment conducive to innovative thinking and artistic development, ultimately blurring the lines between formal and informal education. The paper

reflects on the experiences of participants, illustrating how the informal environment fosters a rich exchange of ideas and encourages risk-taking in creative endeavors, while also acknowledging the challenges that can arise from the perceived gap between faculty and students.

(Zhang, 2019) The paper emphasizes that informal learning spaces in universities stimulate autonomous and self-organizing learning behaviors, serving as a complement to formal teaching environments. These spaces promote personalized learning, collaborative communication, and efficient use of idle areas. To effectively create these informal learning spaces, universities should consider factors such as location distribution, service population, and functional use, while adhering to principles of cost, convenience, and comfort, thereby enhancing the overall learning experience in transitional spaces.

(Tse & Jones, 2019) The paper examines informal learning spaces in a university context, focusing on how students utilize these transitional spaces. It identifies three key factors influencing usage: comfort, convenience, and community. Comfort encompasses furniture configuration, air quality, lighting, cleanliness, and facilities. Convenience relates to proximity to classes and the ability to consume food and engage in discussions. Community is defined by privacy and habitual use for specific activities. Intentional design considering these factors enhances student preference for informal learning spaces during class times.

(Orhan, 2020) The study emphasizes that integrating informal education can enhance the learning experience and help students develop necessary skills alongside their formal curriculum. The survey identified 'architectural-cultural field trips' and 'design field trips' as the most favored informal education methods. These activities are appreciated for their ability to facilitate learning through real-world experiences. A significant finding is that the relationship with lecturers plays a crucial role in helping students adapt to the architectural education system. The findings suggest that architectural education should foster a lifelong learning mindset, encouraging students to engage with their environment and continuously seek knowledge beyond the classroom.

(Tampubolon & Kusuma, 2020) The paper identifies informal learning spaces (ILS) in higher education, such as cafeterias, lounges, and outdoor settings, as

conducive environments for reading activities. These spaces support both individual and collaborative learning, with library ILS preferred for individual reading and non-library ILS facilitating group discussions. The study emphasizes the importance of adapting the functions and types of ILS to enhance student engagement and responses, thereby promoting effective informal learning activities in transitional spaces on college campuses.

(Ozdemir et al., 2020) The Research encompassing of informal education significantly contributes to the development of students' design skills. It emphasizes that experiences outside the formal curriculum, such as those provided by the (Bademlik Design Festival) BTF, help students cultivate essential design thinking skills like interaction, innovation, and original thinking. The workshops create a supportive environment that enhances psychological harmony among participants. Students benefit from socializing, sharing knowledge, and working in groups, which contributes to their overall learning experience. The findings align with the notion of lifelong learning, as informal education allows students to acquire knowledge and skills beyond traditional classroom settings. This approach encourages continuous personal and professional development.

Neslihan, İmamoğlu (2020) The growing recognition among architecture students of the significance of informal educational activities. These activities, such as the Betonart Architecture Summer School (BASS), provide opportunities for students to engage with current issues and explore diverse areas of interest beyond the constraints of formal education. Unlike formal education, which often focuses on achieving specific outcomes, informal education is process-oriented. This approach encourages creativity and exploration, allowing students to produce various physical outputs such as public space arrangements and sculptures without the pressure of achieving a predetermined final product.

(Xue et al., 2020) The paper highlights that informal learning activities in college transitional spaces, such as corridors, are significantly influenced by their design. Spaces with high visibility and accessibility promote informal learning behaviors, as they encourage interaction and engagement among students. The study emphasizes that the layout of these transitional areas can enhance the probability of informal learning occurrences, suggesting that thoughtful architectural design can

facilitate more effective informal learning environments in college teaching buildings.

(Wu et al., 2021) The paper identifies informal learning activities in college transitional spaces as influenced by six significant design characteristics: comfort, flexibility, functionality, spatial hierarchy, openness, and support facilities. These characteristics shape student preferences and activities, enhancing their learning experiences. The study emphasizes that well-designed informal learning spaces can facilitate various activities, such as collaboration, social interaction, and independent study, ultimately enriching the overall educational environment in higher education institutions.

Michael, Shats. (2022) The research paper discusses the implementation of Collaborative Learning in Informal Spaces (CLIS) within a Gender Studies unit, where students engaged in informal learning activities in small teams. These activities took place in informal learning spaces on campus, allowing for critical discussions on gender, sexuality, and social issues. This approach fostered a safe environment for mutual learning and enhanced students' confidence in articulating their opinions, thereby facilitating a more holistic and interpersonal learning experience during their college transition.

Furkan, (2022) The study emphasizes that formal education alone is inadequate for addressing the complexities of design education. It highlights the necessity of integrating informal methods, such as workshops, to enhance learning experiences in architecture. The paper concludes that workshops play a vital role in bridging the gap between formal and informal education in architecture, providing essential learning opportunities that enrich the educational experience for students. The integration of these educational models is crucial for fostering a more effective and adaptable design education.

(Datey, 2023) The study highlights the importance of these routine and informal activities in building shared knowledge and fostering supportive communities among casual academics. Undergraduate architectural design education, the professional development of casual academics is significantly influenced by their engagement in 'situated' activities such as design conversations with students and informal chats with colleagues. Given study focus on 'situated'

activities such as design conversations and informal chats, it is likely that observational methods were used to capture these interactions in their natural settings. The paper emphasizes the need for recognizing and supporting the informal and situated learning experiences of casual academics to enhance their professional development.

(Cantürk Akyildiz & Özgüven, 2024) The literature emphasizes the importance of student-led initiatives in organizing extracurricular activities. These activities, such as symposiums and workshops, are designed and executed by students, fostering a sense of ownership and responsibility in their learning process. This student initiative is crucial for creating meaningful learning experiences. Activities in architectural education underscores the importance of integrating informal learning experiences, focusing on student-led initiatives, and adapting educational models to meet the evolving demands of the profession.

2.3.1 Observation & Inferences on Informal learning Activities in college Transitional Spaces

Informal learning activities in college transitional spaces play a crucial role in enhancing students' educational experiences by providing opportunities for social interaction, creativity, and self-directed learning. These spaces, which exist between formal learning environments, offer a unique setting for students to engage in activities that complement their formal education. The design and utilization of these spaces can significantly impact the effectiveness of informal learning. This answer explores the characteristics, benefits, and considerations of informal learning activities in transitional spaces, drawing insights from various studies.

Transitional spaces are characterized by their accessibility and visibility, which are crucial for facilitating informal learning behaviors. Spaces with high visibility and frequent use, such as corridors, are more conducive to informal learning activities. Key design characteristics that influence student preferences include comfort, flexibility, functionality, spatial hierarchy, and openness. These features can enhance the usability and attractiveness of informal learning spaces.

Informal activities in transitional spaces, such as model-making, have been shown to significantly enhance students' knowledge levels. For instance, activities conducted in courtyards and student plazas demonstrated high knowledge gains.
These spaces support collaborative activities, such as group discussions and presentations, which are essential for developing social skills and teamwork.

Transitional spaces provide an interactive zone where students can engage in creative and critical thinking without the constraints of formal assessment.

In summary, informal learning activities in college transitional spaces are enriched by the interplay of flexible design, social hubs, and peer interaction. These elements collectively foster an environment conducive to self-directed and collaborative learning, ultimately enhancing student engagement and educational outcomes. The thoughtful integration of these concepts into the design of transitional spaces can lead to more effective informal learning experiences for students in higher education.

2.4 EFFECT OF INFORMAL LEARNING ACTIVITIES ON STUDENTS INFORMAL LEARNING

Review conducted with in Informal learning activities play a crucial role in enriching both their educational experiences and their overall personal development in a multitude of ways. Activities, which take place outside the confines of the conventional classroom environment, not only foster enhanced academic performance but also cultivate a heightened interest in specific disciplines, alongside the acquisition of indispensable skills that are vital for success in both academic and professional spheres. In the subsequent sections, a comprehensive examination of the effects that informal learning activities have on students will be undertaken, utilizing insights derived from a critical analysis of the research papers provided for this study. This exploration aims to illuminate the complex interplay between informal learning and student outcomes, thereby contributing to a deeper understanding of the significance of such activities within the broader educational landscape.

Daniela, Porumbu. (2014) The paper highlights that informal learning, particularly through coaching, significantly enhances students' skill development and personal growth. Activities that foster dynamic interactions between coaches and

students allow learners to explore opportunities and solve problems independently. This non-aggressive approach focuses on behavior rather than results, enabling students to acquire valuable skills through experiential learning. Consequently, such activities not only improve individual performance but also contribute to the long-term development of future educators, benefiting the children they will teach.

(Finkelstein et al., 2016) The study found that engaging with small-scale interactive science exhibits significantly increased students' interest in science and self-reported knowledge gains. Students reported that the program allowed them to engage in scientific activities, with intermediate elementary students noting greater knowledge gains compared to middle school students. The hands-on nature of the exhibits facilitated direct interaction, enabling students to build experiences that could enhance later formal learning, aligning with the goals of informal science education.

(Waldock et al., 2017) Activities in informal learning spaces significantly enhance student engagement by fostering a sense of community and motivation. Students reported that working in shared environments encourages collaboration and peer support, which are crucial for their learning experience. The design of these spaces, including group-working tables and mobile IT support, facilitates both individual and group work, leading to increased participation in curricular and extracurricular activities. This active involvement helps students feel part of a professional community, enhancing their overall learning experience.

Ioannis (2017) The study found that incorporating gamified activities using interactive displays significantly improved students' knowledge acquisition, satisfaction, enjoyment, and intention to participate in future informal learning events. By adapting the framework for gamified activities, students engaged more deeply with the content during extracurricular activities, leading to enhanced mental exercise, creativity, and communication. The results indicate that such interactive and gameful approaches can effectively boost engagement metrics in informal learning environments like science centers and museums.

(Van Marsenille, 2017) The study highlights that informal learning activities significantly impact students' language acquisition. Learners of English primarily engage in online activities, such as watching films and TV series, while Dutch

learners participate more in real-life interactions, like speaking with locals. Both groups occasionally read newspapers and magazines and speak to native speakers. Understanding these activities can help teachers incorporate them into formal learning, thereby enhancing motivation and bridging the gap between informal and formal language learning.

(Wu et al., 2021) The paper identifies that the activities students engage in within informal learning spaces are significantly influenced by spatial design characteristics. These characteristics, such as comfort, flexibility, functionality, spatial hierarchy, openness, and support facilities, shape students' preferences for using these spaces. By understanding how these design elements affect student activities, the research provides insights that can inform future design strategies for enhancing informal learning environments in higher education, ultimately enriching the overall student experience.

(Sockett, 2023) Informal learning activities significantly enhance language development for many learners, as they offer longer exposure times and varied forms of engagement compared to formal and non-formal activities. While formal and non-formal learning often lack sufficient exposure for substantial language growth when isolated, informal learning provides the necessary context and interaction that supports comprehension and skill acquisition. This interaction creates a personal learning environment tailored to each learner, facilitating better outcomes in language learning during study abroad experiences.

Andrea (2023) The "Passion in Action - Pia" initiative at Polytechnic di Milano enhances students' informal learning by offering a variety of participatory educational activities that foster cross-cutting competencies, soft skills, and social skills. The "Design Explorer – DE" program encourages students to explore design beyond the classroom, engage with the city of Milan, and pursue their individual passions. This interactive and socially collaborative learning approach allows students to refine their existing knowledge and innovate, developing new ideas and skills.

Cosarba (2024) Participation in non-formal educational activities significantly enhances students' informal learning by fostering social competence and improving self-esteem. These activities, such as excursions and cultural events, create

opportunities for students to engage with peers and trusted adults, which positively influences their motivation and cognitive development. The Pearson correlation index indicates that students involved in these activities achieve superior school performance, particularly in subjects like Mathematics and Language, compared to those who do not participate. Thus, non-formal education effectively complements formal learning and contributes to overall student development.

Hairunnisa, Hussim (2024) Activities in informal (science, technology, engineering, and mathematics) STEM learning environments significantly enhance students' interest, self-efficacy, and awareness of STEM fields. The systematic review identified seven key themes of effective STEM activities: inquiry, problem focus, design, cooperative learning, student-centered approaches, hands-on experiences, and the development of 21st-century skills. These characteristics contribute to a diverse range of informal learning experiences that positively impact K–12 students, suggesting that well-structured informal STEM activities can foster deeper engagement and understanding of STEM disciplines.

2.5 NATIONAL EDUCATION POLICY 2020 (NEP 2020)

(Aithal & Aithal, 2020) The paper explains a well-articulated and forward-looking educational policy is imperative for a nation, particularly at the primary, secondary, and tertiary educational levels, due to the pivotal role education plays in fostering economic and social advancement. Various nations implement diverse educational frameworks, considering their unique traditions and cultural contexts, and subsequently establish different phases throughout the educational trajectory at both school and college levels to enhance efficacy. Recently, the Government of India unveiled its new Educational Policy, which is grounded in the recommendations put forth by an expert committee chaired by Dr. Kasturirangan, the former chairman of the Indian Space Research Organization (ISRO). This paper elucidates the various policies introduced within the higher education framework and juxtaposes them with the currently operational system. An array of innovations and anticipated ramifications of NEP 2020 on the Indian higher education landscape, along with its advantages, are thoroughly examined. In conclusion, the paper underscores the significance of the NEP 2020 in transforming the higher education landscape in India,

while also providing a critical analysis of its potential impacts and necessary steps for successful implementation.

(Panditrao & Panditrao, 2020) The National Education Policy 2020 is India's first major education reform, aiming to enhance accessibility through a learner-centric system that integrates modern technology and innovative teaching methods, while also addressing implementation challenges. The National Education Policy 2020 is a comprehensive roadmap for transforming India's education system, focusing on access, quality, and holistic development. It aims to reshape teaching practices, learning outcomes, and educational practices. The policy has the potential to foster a knowledge-driven society and prepare India's youth for the challenges of the 21st century.

(Kundu & Bej, 2021) The paper provides a comprehensive analysis of the provisions for Educational Technology (ET) adoption in the Indian National Education Policy (NEP) 2020, focusing on three main aspects: pedagogical, institutional, and human factors. Here are the key results derived from the analysis. Problem-based learning and immersive experiences are identified as essential components of future education, where technology plays a crucial role in facilitating real-world problem-solving. The findings highlight the role of platforms like DIKSHA and SWAYAM in enhancing teachers' pedagogical capabilities. These platforms are designed to innovate new strategies for technology integration in education

(Salvi, 2022) The economic and social advancement of a nation is fundamentally reliant upon the level of education that its citizens, or the human capital of that particular country, possess and acquire throughout their lives. Consequently, it becomes imperative for a nation to establish a well-structured, clearly articulated, and forward-thinking policy regarding both higher education and school education that can effectively address the educational needs of its populace. In order to ensure the success and efficacy of both higher education and school education systems, various countries implement distinct educational frameworks that are tailored to align with their unique cultural traditions and subcultural nuances. This paper aims to illuminate the various components that have been introduced in the newly formulated education policy of 2020, while also making a comparative

analysis of the educational system that is currently in place and evaluating the innovative features that are encapsulated within the new policy, all of which are related to a range of anticipated advancements and innovations in the field of education.

(Ramesh, 2023) The National Education Policy (NEP) of India, unveiled in 2020, represents a paradigm shift aimed at fundamentally transforming the nation's educational framework. This article offers a thorough examination of the existing literature concerning the NEP 2020, investigating its objectives, salient characteristics, ramifications, and obstacles. The review elucidates the policy's aspirational strategy in tackling pressing issues such as accessibility, quality, and comprehensive development within the educational landscape. It accentuates the potential of NEP 2020 to redefine pedagogical methodologies, learning outcomes, and educational practices, while concurrently recognizing the difficulties associated with its successful execution. The analysis further delves into the significance of technology, vocational education, and the empowerment of educators in achieving alignment with the policy's overarching vision. The literature review highlights the pivotal role of NEP 2020 in cultivating a knowledge-centric society and equipping the youth of India to confront the complexities of the 21st century.

2.5.1 Observation and inferences on effect of informal learning activities on students informal learning

Informal learning activities significantly impact students by enhancing their educational experiences and personal development. These activities, which occur outside the traditional classroom setting, contribute to improved academic performance, increased interest in specific fields, and the development of essential skills.

Participation in non-formal educational activities has been shown to improve school performance and foster positive learning attitudes. Students involved in such activities often exhibit superior academic qualifications compared to their peers who do not participate.

Informal learning activities, such as summer camps, enhance students' interest and self-efficacy in fields. These activities are characterized by inquiry-based

learning, problem-solving, and hands-on experiences, which are crucial for developing latest skills. Programs like "Passion in Action" demonstrate the potential of informal learning to foster cross-disciplinary skills and personal interests. These programs encourage students to explore beyond formal education, enhancing their creativity and critical thinking abilities.

The National Education Policy (NEP) 2020 in India aims to transform the education system by promoting holistic and multidisciplinary learning, emphasizing critical thinking and creativity. By introducing a flexible curriculum and promoting vocational education, NEP 2020 also encourages students to explore diverse career paths and develop practical skills that are essential in today's job market. This policy also emphasizes the importance of teacher training and development, recognizing that well-equipped educators are crucial for delivering high-quality education. In addition to these initiatives, the NEP 2020 advocates for integrating technology into the teaching and learning, thereby enhancing informal learning experiences and providing students with access to a wealth of resources that can enrich their educational journey. This comprehensive approach aims to create a more holistic education system that not only prepares students academically but also nurtures their creativity, critical thinking, and adaptability in an ever-changing world.

2.6 INFERENCES AND RESEARCH GAP

The review presented above indicates that a large number of studies have been conducted to explain the need and use of transitional spaces. Many studies have disclosed the fact that students use transitional spaces for academic purposes which tend to be the outcome of supplementary learning through everyday experiences. In India, limited studies have been conducted on the use of transitional spaces, as transitional spaces are emerging concepts. It is necessary to know the student's behavior and attitude toward the role of transitional spaces in an academic environment.

For establishing the research gap systematic literature review was made. The gap between past researcher and the present status with regard to utilization of transitional spaces for promoting learning of design subject is clearly evidenced. This proves the necessity for taking of research on testing multiple learning activities in

teaching learning programmer in transitional spaces.

Secondly there is no research conducted on effect of various activities conducted in transitional space on leaning of students. It was found necessary to incorporate this aspect in the present study. Review of literature has clearly established remarkable researches gap as far as the learning activities and their effect on actual learning by the students. It strongly supports for inclusion of the related objective in the present study.

CHAPTER-3: METHODOLOGY

Research methodology deals with the description of empirical measures for testing the hypothesis developed. Detailed methodology was developed for studying the various aspects and parameters related to the present study. Considering the importance of the present study this chapter has been divided into subsections to enable logical presentation of the definitions, concepts, technique, procedures, techniques, and materials utilized for the present investigation. As the present research study involves a combination of socio-psychological and architectural parameters, efforts have been made to develop relevant methodology. This helped to arrive at the most logical and empirical conclusions. The conceptual model and flow chart of methodology is given below.

CONCEPTUAL MODEL

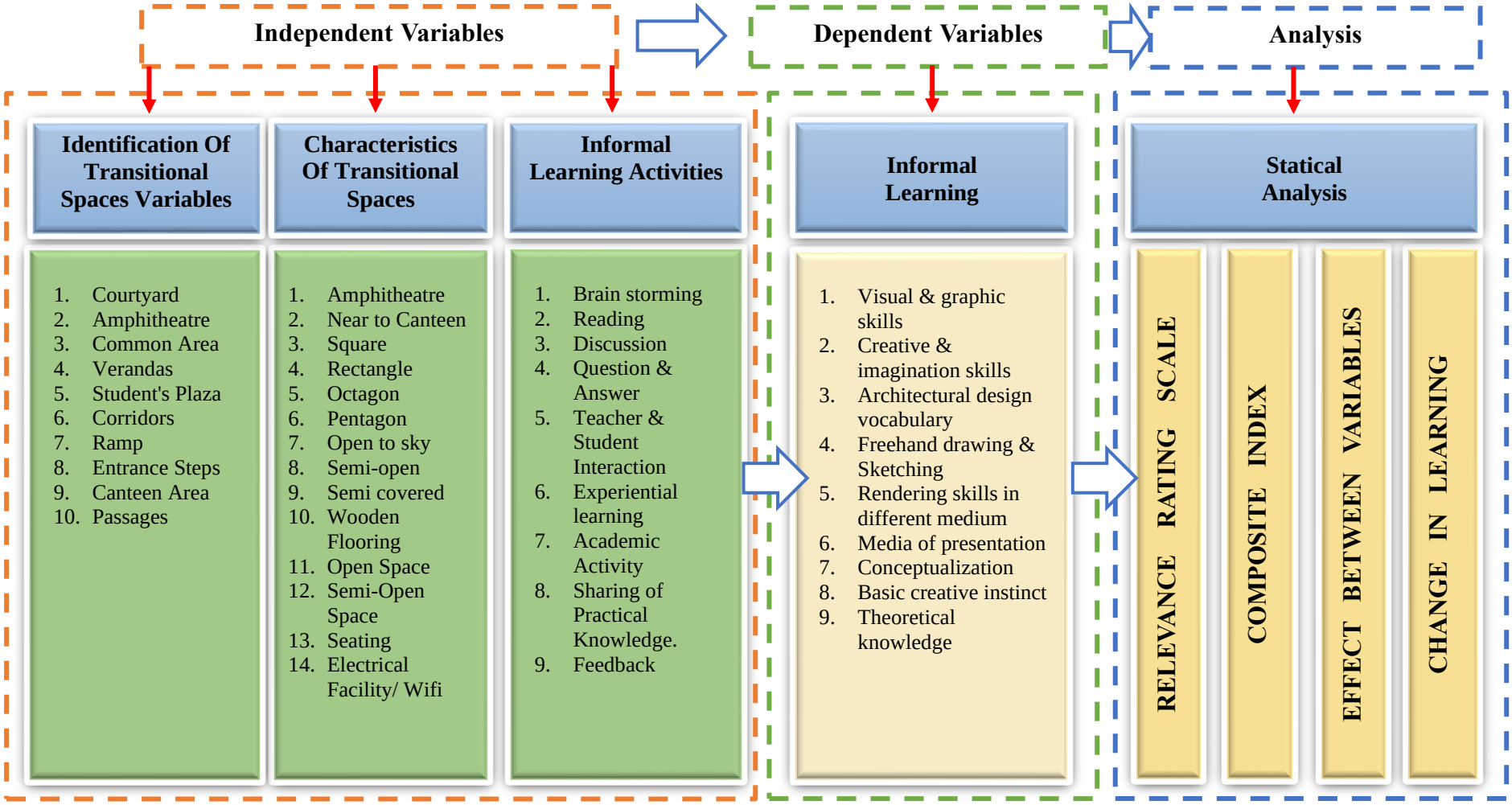


Figure 3.1: Flow Chart of Conceptual Model

Detail methodology was developed for studying various aspects. Considering the importance of the research methodology, the chapter was logical presentation of the definitions, concepts, methods, procedures, and techniques used for the present investigation. The flow chart of methodology is given below.

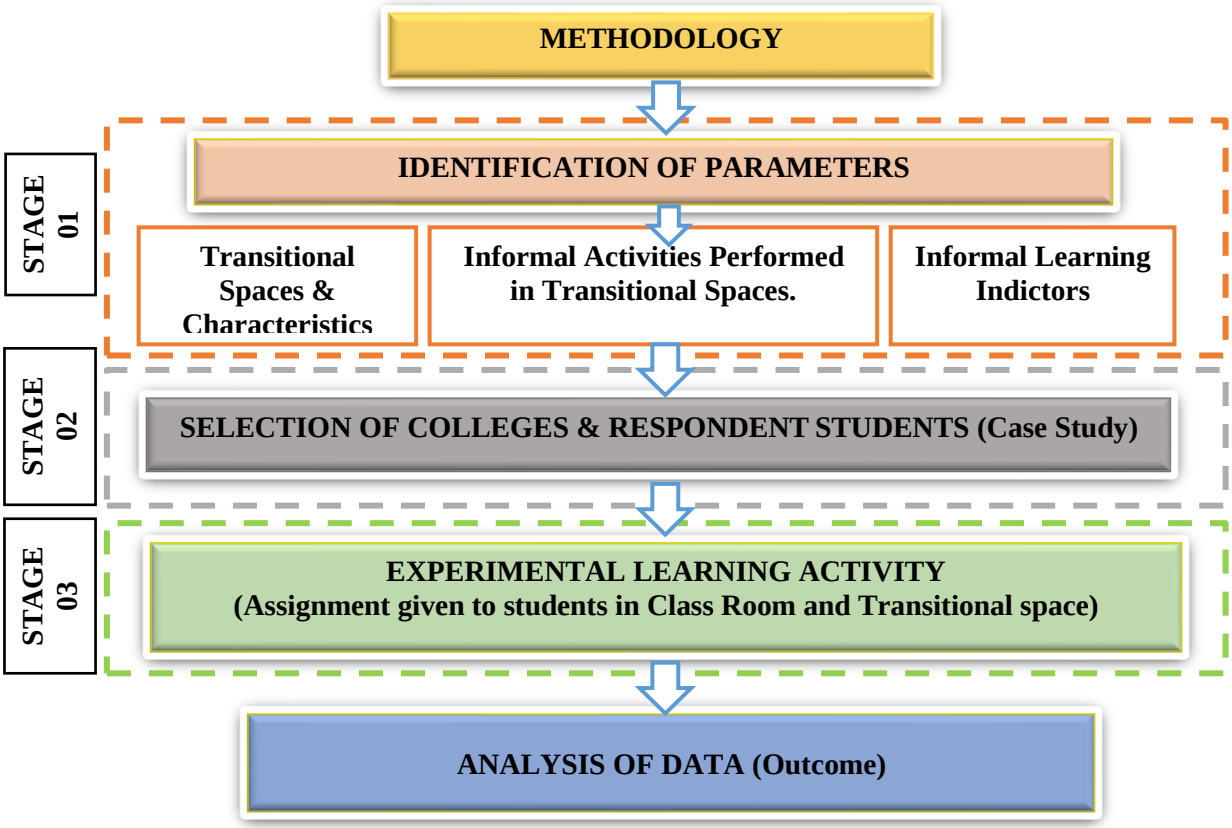


Figure 3.2: Flow Chart of Methodology

3.1 SUBSECTIONS OF METHODOLOGY

i. Identification and selection of transitional spaces and their characteristics.
ii. Identification and selection of lnformal learning activities.
iii. Identification and selection of Informal learning Indicators.
iv. Locale and year of study.
v. Sample and sampling technique.
vi. Selection of colleges
vii. Selection of students
viii. Selection of variable and their measurement
ix. Socio-economic and academic profile of the selected respondent students.

x. Research design.

xi. Design Experiment

xii. Collection of data from selected Informal learning indictors

xiii. Reliability and validity of data.

xiv. Normality and non-parametric test

xv. Development of Informal learning index

xvi. Distributional analysis

xvii. Relational analysis

xviii. Statical Methods

3.2 IDENTIFICATION AND SELECTION OF TRANSITIONAL SPACES AND THEIR CHARACTERISTICS

The process for Identification and selection of transitional Spaces and their characteristics was explained in flow chart is given below.

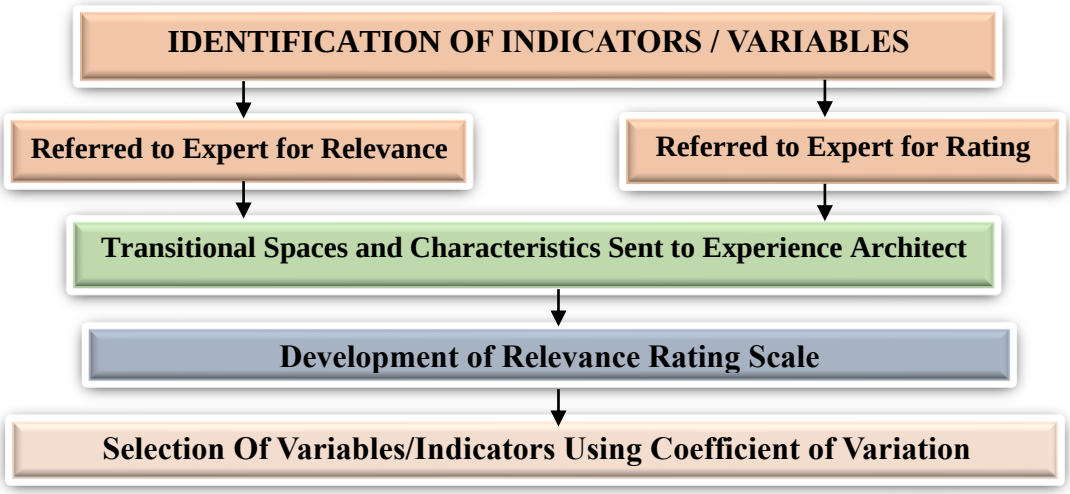


Figure 3.3: Flow chart of Identification and Selection of Transitional Spaces

3.2.1 Transitional Spaces

Transitional spaces in architecture are defined as a link or a connecting space between two enclosed spaces and also defined as it is a space of the experience. In all 20 transitional spaces were identified based on a study. The list of identified transitional spaces is as follows.

Table 3.1 : Identified Transitional Spaces

Sr.No.	Identified Transitional Spaces in colleges
1	Courtyard
2	Verandas
3	Corridors
4	Staircase Area
5	Ramp
6	Entrance Steps
7	Amphitheatre
8	Entrance Lobby
9	Canteen Area
10	Library Area
11	Building Podium
12	Parking Space
13	Lift Lobby
14	Common Area
15	Assembly Area
16	Student's Plaza
17	Passages
18	Entrance Threshold
19	Balcony
20	Terrace

The identified transitional spaces were referred to two groups of judges, one who were architects with more than ten years of experience in their field and others who were college teachers with more than ten years of experience in teaching for judging relevance and rating their importance. Rating was subjected to three points continuums namely **most relevant**, **relevant** and **not relevant** with 3, 2 and 1 scores. After obtaining a rating from judges, mean score, S.D. and C.V. for each transitional space were worked out and presented in Table 3.2.

Table 3.2 : Mean Score, Standard Deviation (SD) And Coefficient of Variations (CV) based on Judges Rating

Sr.No.	Transitional Space	Mean Score	SD	CV
1	Courtyard	2.9	0.32	10.90
2	Verandas	2.7	0.48	17.89
3	Corridors	2.4	0.70	29.13
4	Staircase Area	2.1	0.88	41.70
5	Ramp	2.4	0.70	29.13
6	Entrance Steps	2.4	0.52	21.52
7	Amphitheatre	2.8	0.42	15.06
8	Entrance Lobby	1.6	0.70	43.70
9	Canteen Area	2.4	0.52	21.52
10	Library Area	1.6	0.84	52.70
11	Building Podium	2.3	0.82	35.79
12	Parking Space	1.6	0.70	43.70
13	Lift Lobby	1.4	0.70	49.94
14	Common Area	2.8	0.42	15.06
15	Assembly Area	2.3	0.82	35.79
16	Student's Plaza	2.5	0.71	28.28
17	Passages	2.3	0.48	21.00
18	Entrance Threshold	2	0.82	40.82
19	Balcony	2.2	0.92	41.77
20	Terrace	1.6	0.70	43.70

In general, C.V. between 20-30 is acceptable and greater than 30 is unacceptable (Wilson & Payton, 2002). (C.V. is referred to as a measure of dispersion and it is worked out by formula C.V. = SD/Mean x100). Considering this, transitional spaces with more than 30 C.V. were deleted. Finally, 10 transitional spaces were selected. Thereafter transitional spaces were ranked based on mean score. The list of finally selected transitional spaces along with their mean score, C.V., and rank is presented in Table 3.3.

Table 3.3 : Selection of Transitional Spaces for Study

Sr.No.	Transitional Space	Mean	SD	CV	RANK
1	Courtyard	2.9	0.32	10.90	Rank 01
2	Amphitheatre	2.8	0.42	15.06	Rank 02
3	Common Area	2.8	0.42	15.06	Rank 03
4	Verandas	2.7	0.48	17.89	Rank 04
5	Student's Plaza	2.5	0.71	28.28	Rank 05
6	Corridors	2.4	0.70	29.13	Rank 06
7	Ramp	2.4	0.70	29.13	Rank 07
8	Entrance Steps	2.4	0.52	21.52	Rank 08
9	Canteen Area	2.4	0.52	21.52	Rank 09
10	Passages	2.3	0.48	21.00	Rank 10

This table presents rankings for different **transitional spaces** based on their **Mean**, **Standard Deviation (SD)**, and **Coefficient of Variation (CV)**. The spaces are ranked from highest to lowest based on the **Mean score**, which likely indicates their preference or effectiveness.

- **Courtyard (Rank 01)** has the highest mean (2.9) and the lowest CV (10.90%), meaning it is the most preferred and has the least variation in responses.
- **Amphitheatre & Common Area (Ranks 02 & 03)** have the same Mean (2.8) and CV (15.06%), showing equal preference.
- **Student's Plaza, Corridors, and Ramp (Ranks 05, 06, 07)** have the highest variation (CV ~28-29%), indicating mixed opinions.
- **Passages (Rank 10)** is the lowest-ranked space with a Mean of 2.3.

Observations:

- Open and interactive spaces (Courtyards, Amphitheaters, and Common Areas) are the most preferred.
- Corridors, Ramps, and Student's Plaza receive mixed reactions, possibly due to accessibility or congestion issues.
- Passages are the least engaging, suggesting a need for better design or utilization.

3.2.2 Characteristics of Transitional Spaces.

Characteristics refer to a special quality or identity that applies to something that distinguishes a thing. In all 37 characteristics were identified and are presented in Table 3.4.

Table 3.4 : Characteristics of Transitional Spaces

Sr.No.	Main Domain	Sub Domain
1	LOCATION	Near to Class Room
		Centrally located in a college building
		At Entrance of Building
		Near to Amphitheatre
		Near to Canteen
2	SHAPE	Square
		Rectangle
		Triangle
		Octagon
		Pentagon
		Oval
3	SIZE (Ratio)	01:02
		01:03
		01:04
		01:05
4	TYPE OF SPACES	Open to sky
		Semi-open
		Covered
		Semi covered
		Partly covered and partly open
5	PERCENTAGES OF TRANSITIONAL SPACES.	5%
		10%
		20%
		30%
6	MATERIALS	Wooden Flooring
		Hard
		Soft
		Mix
		Level Difference
7	INFRASTRUCTURE	Seating Arrangements for students
		Paneling
		Notice Board
		Electrical Facility/ Wi-Fi
8	SPACES	Open Spaces
		Semi-Open Spaces
		Partly Open Spaces
		Enclose Spaces

These characteristics of transitional space were referred to judges for rating based on importance. The rating was done by the same two groups of judges on three points continuums i.e. most relevant, relevant and not relevant with 3 2 and 1 scores respectively (Rensis Likert in 1932). After obtaining a rating from judges, mean

score S.D. and C.V. for each characteristic was worked out presented in Table 3.5.

Table 3.5: Mean score S.D. and Coefficient of variation (C.V.) for characteristics of Transitional spaces based on judges rating

Sr. No.	Characteristics of Transitional Space	Mean	SD	CV
1	Near to Class Room	2	0.47	23.57
2	Centrally located in college building	2.7	0.48	17.89
3	At Entrance of Building	2.1	0.88	41.70
4	Near to Amphitheatre	2.4	0.70	29.13
5	Near to Canteen	2.4	0.52	21.52
6	Square	1.8	0.42	23.42
7	Rectangle	2.4	0.52	21.52
8	Triangle	1.6	0.84	52.70
9	Octagon	2.8	0.42	15.06
10	Pentagon	1.9	0.57	29.88
11	Oval	2.2	0.63	28.75
12	01:02	2.4	0.52	21.52
13	01:03	2.4	0.70	29.13
14	01:04	2.8	0.42	15.06
15	01:05	2	0.82	40.82
16	5%	1.6	0.70	43.70
17	10%	2.3	0.82	35.79
18	20%	2.8	0.42	15.06
19	30%	2.8	0.63	22.59
20	Open to sky	2.8	0.42	15.06
21	Semi-open	2.9	0.32	10.90
22	Covered	2.2	0.92	41.77
23	Semi covered	2.5	0.53	21.08
24	Partly covered and partly open	1.4	0.70	49.94
25	Hard	2.7	0.48	17.89
26	Soft	2.6	0.70	26.89
27	Mix	2.1	0.99	47.35
28	Wooden Flooring	2.8	0.63	22.59
29	Level Difference	1.3	0.67	51.92
30	Open Spaces	2.3	0.67	29.35
31	Semi-Open Spaces	2.7	0.48	17.89

32	Partly Open Spaces	2.5	0.53	21.08
33	Enclose Spaces	1.3	0.48	37.16
34	Seating Arrangements for students	2.8	0.42	15.06
35	Paneling	2.7	0.48	17.89
36	Notice Board	2.8	0.63	22.59
37	Electrical Facility/ Wifi	2.2	0.63	28.75

The characteristics of transitional spaces whose C.V. is more than 30 were deleted (Reed et al., 2002). Finally, 27 Characteristics of transitional spaces were selected. Thereafter, based on composite mean score the characteristics were ranked from most important to least important. The final list of selected characteristics of transitional spaces are as follows in Table 3.6.

Table 3.6: Selected Characteristics of Transitional Spaces

Sr.No.	**Characteristics of Transitional Space**	**Mean**	**SD**	**CV**
1	Near to Class Room	2	0.47	23.6
2	Centrally located in college building	2.7	0.48	17.9
3	Near to Amphitheatre	2.4	0.70	29.1
4	Near to Canteen	2.4	0.52	21.5
5	Square	1.8	0.42	23.4
6	Rectangle	2.4	0.52	21.5
7	Octagon	2.8	0.42	15.1
8	Pentagon	1.9	0.57	29.9
9	Oval	2.2	0.63	28.7
10	01:02	2.4	0.52	21.5
11	01:03	2.4	0.70	29.1
12	01:04	2.8	0.42	15.1
13	20%	2.8	0.42	15.1
14	30%	2.8	0.63	22.6
15	Open to sky	2.8	0.42	15.1
16	Semi-open	2.9	0.32	10.9
17	Semi covered	2.5	0.53	21.1
18	Hard	2.7	0.48	17.9
19	Soft	2.6	0.70	26.9
20	Wooden Flooring	2.8	0.63	22.6
21	Open Space	2.3	0.67	29.3
22	Semi-Open Space	2.7	0.48	17.9
23	Partly Open Space	2.5	0.53	21.1
24	Seating Arrangements for students	2.8	0.42	15.1
25	Paneling	2.7	0.48	17.9
26	Notice Board	2.8	0.63	22.6
27	Electrical Facility/ WIFI	2.2	0.63	28.7

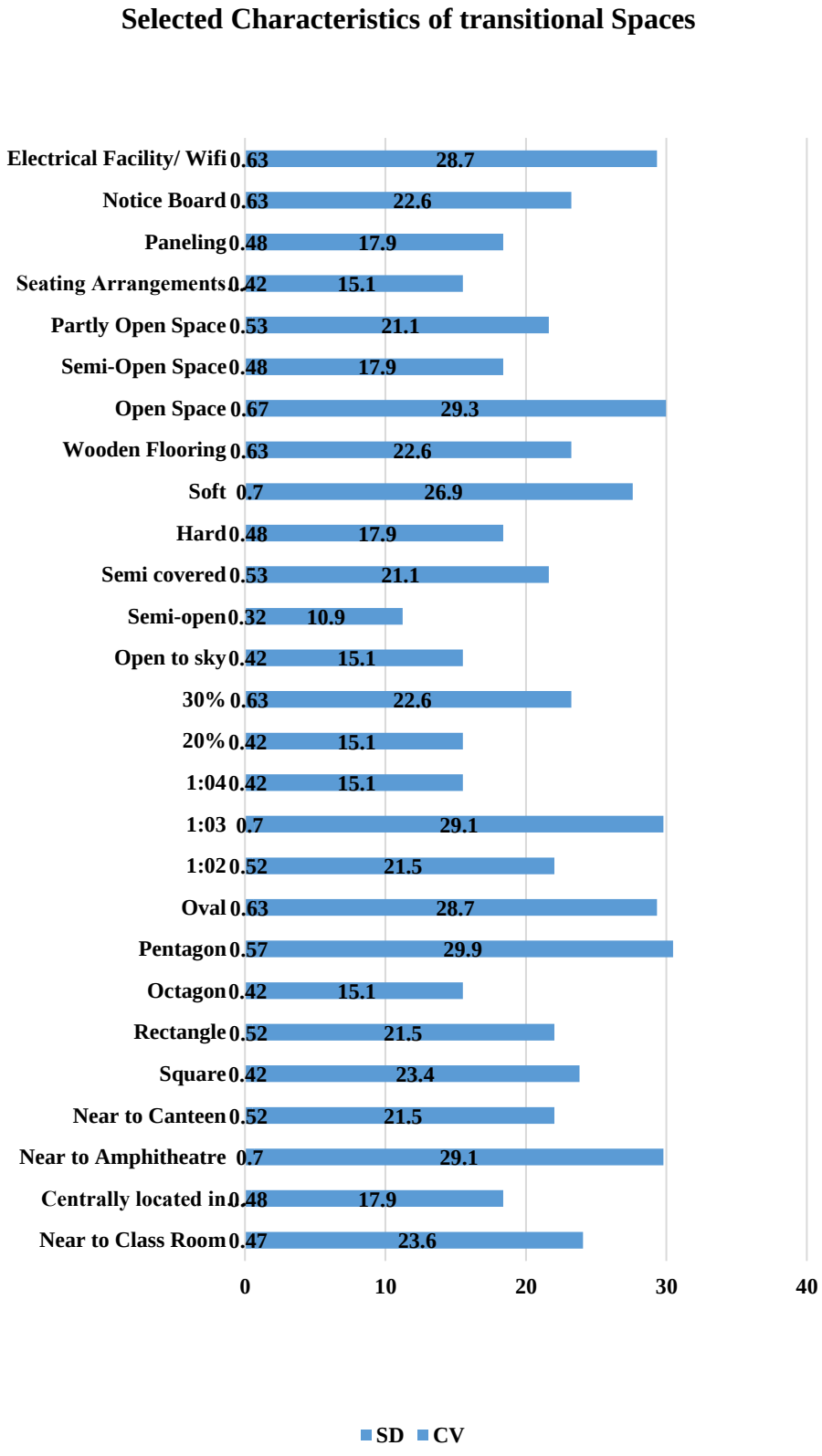


Figure 3.4: Selected Characteristics of Transitional Spaces

This table evaluates different **characteristics of transitional spaces** based on their **Mean (preference score)**, **Standard Deviation (SD)**, and **Coefficient of Variation (CV)**.

- **Centrally located in college building (Mean = 2.0)** Surprisingly high, indicating that proximity to classrooms is a major factor in space preference.
- **Polygon like Octagon (Mean=2.8**) Preferred characteristics with stable opinions.
- **Semi-open (Mean=2.3)** Most agreement among respondents, meaning almost everyone values it.
- **01:02 Ratio (Mean=2.4)** Preferred characteristics with stable opinions.
- **Hard Flooring (Mean=2.7)** Preference, possibly due to maintenance.
- **Seating (Mean=2.8)** are essential, likely improving usability.

Observations from table:

- The location of a transitional space (centrally located) is important because it acts as a hub that connects different functions (e.g., studios, classrooms, workshops, libraries).
- Semi-open spaces with seating arrangements, notice boards, and electrical facilities (WIFI) are highly valued. This characteristic will facilitate transitional spaces for informal learning.
- Polygon like Octagonal layouts and proportion ratios (01:02) are favoured over square or pentagon shapes. Octagons provide a balance making spaces feel more dynamic yet structured.
- Hard flooring and open spaces receive mixed reviews, suggesting they work well and last longer with heavy foot traffic and activities.

3.3 IDENTIFICATION OF AND SELECTION OF INFORMAL LEARNING ACTIVITIES

The Identification and Selection of Informal learning activities was explained in flow chart presented below

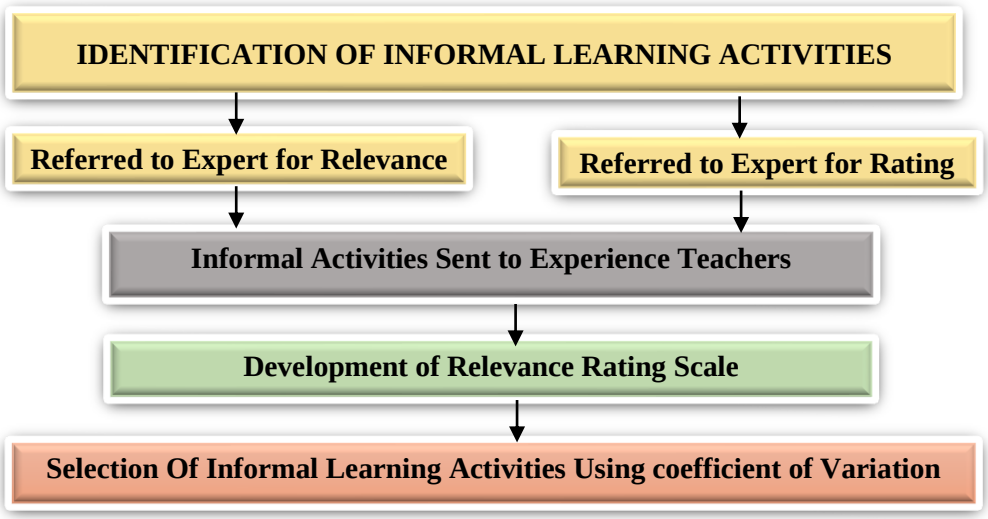


Figure 3.5: Flow chart of Identification of and Selection of Informal Learning Activities

Informal Learning refers to learning that takes place outside of a formal classroom. Informal education can take many different forms, such as watching videos, studying independently, reading books, engaging in blogs and chat rooms, receiving performance support, receiving coaching and playing games. In the present study, informal learning activities referred to activities that are conducted in transitional spaces of different colleges. In all 15 different informal learning activities were identified. The identified activities are presented in Table 3.7.

Table 3.7: Identified informal learning activities

Sr. No.	Activities Identified
1	Model Making Activity
2	Workshop
3	Jury/presentations
4	Group Discussion with Friends
5	Brain Storming
6	Sharing of Practical Knowledge
7	Experiential learning
8	Discussion with Teaches
9	Teacher & Student Interaction
10	Academic Activity
11	Cultural Programmes
12	Address to students
13	Reading
14	Students Meeting
15	Students Presentation

The identified informal learning activities were subject to judge's ratings on 3 points continuums namely, **most important, important and not important** with 3, 2 and 1 scores. The group of judges consisted of 23 teaching faculties from different architecture colleges. After obtaining a rating from the judge's, mean score, S.D. and C.V. for each activity were worked out and presented in Table 3.8.

Table 3.8: Mean score S.D. and C.V. for informal learning activities

Sr. No.	Activities Conducted	MEAN	SD	CV
1	Model Making Activity	2.4	0.73	29.89
2	Workshop	2.2	0.60	27.05
3	Jury/presentations	1.7	0.45	25.82
4	Group Discussion with Friends	1.5	0.67	45.01
5	Brain Storming	2.0	0.82	40.35
6	Sharing of Practical Knowledge	1.7	0.49	29.48
7	Experiential learning	1.7	0.47	27.75
8	Discussion with Teaches	1.8	0.52	29.08
9	Teacher & Student Interaction	1.4	0.50	35.87
10	Academic Activity	2.1	0.60	28.58
11	Cultural Programmes	1.9	0.63	33.46
12	Address to students	1.4	0.51	35.33
13	Reading	1.0	0.21	19.98
14	Students Meeting	1.8	0.49	26.89
15	Students Presentation	2.5	0.67	26.38

Informal learning activities with more than 30 C.V. were deleted. The activities were ranked based on mean score obtained for each activity ranging from most important to least important. The list of finally selected informal learning activities is given in table 3.9.

Table 3.9: Selected Informal Learning Activities

Sr.No.	Activities Conducted	MEAN	SD	CV	RANK
1	Students Presentation	2.5	0.7	26.4	1
2	Model Making Activity	2.4	0.7	29.9	2
3	Workshop	2.2	0.6	27.0	3
4	Academic Activity	2.1	0.6	28.6	4
5	Student Meeting	1.8	0.5	26.9	5
6	Discussion with Teachers	1.8	0.5	29.1	5
7	Jury/presentations	1.7	0.4	25.8	6
8	Sharing of Practical Knowledge	1.7	0.5	29.5	6
9	Experiential learning	1.7	0.5	27.7	6
10	Reading	1.0	0.2	20.0	7

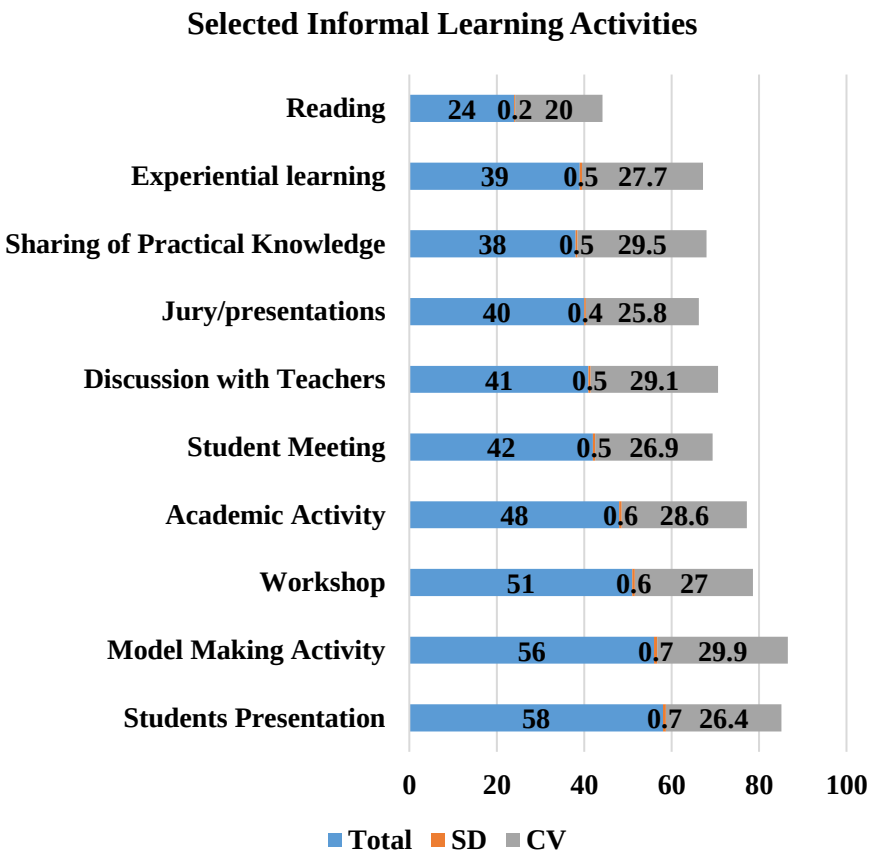


Figure 3.6: Selected Informal Learning Activities

This table evaluates different activities conducted in transitional spaces based on their **Mean (preference score), Standard Deviation (SD), Coefficient of**

Variation (CV), and Rank.

- **Students' Presentation (Mean = 2.5, Rank 1)** Most preferred activity, likely due to the open and interactive nature in transitional spaces.
- **Model Making Activity (Mean = 2.4, Rank 2)** Practical and hands-on work is valued.
- **Workshops & Academic Activities (Mean = 2.2 - 2.1, Ranks 3-4)** Indicates that structured informal learning activities also take place in these spaces.

Observation:

- Activities like model making, workshop have high valued in preference, suggesting activities work better for specific group academic tasks in transitional spaces.
- Student presentation and Model Making are best suited activities for enhancing student's collaborative skills.
- Formal academic activities (like jury presentations and discussions with teachers) are preferred in these spaces feel less rigid and more engaging, encouraging confident presentations and discussions.
- Silent individual tasks (like reading) are the least preferred in transitional spaces.

Out of ten activities selected, three activities with the highest ranking were finally selected for an experiment i.e. Students Presentation, Model Making Activity, Workshop.

3.4 IDENTIFICATION OF INFORMAL LEARNING INDICATORS

The Identification and Selection of Informal Learning Indicators was explained in flow chart presented below.

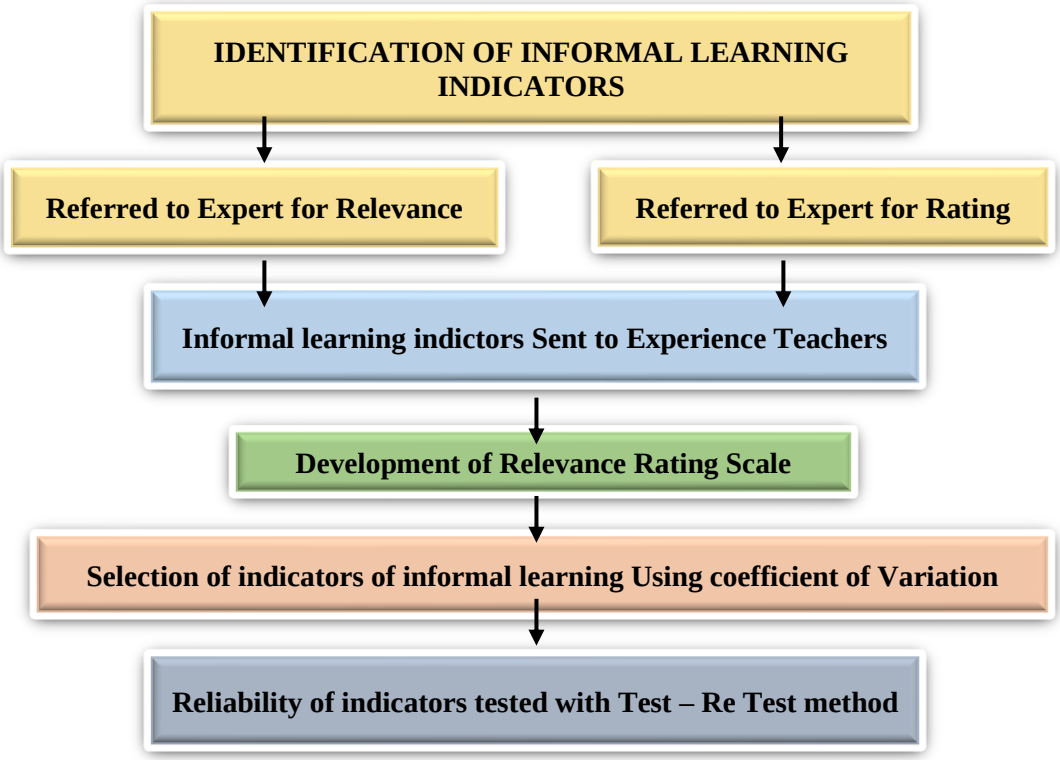


Figure 3.7: Flow chart Informal Learning Indicators

Informal learning means any learning i.e., not formal, self-directed away from the classroom or learning from experience, (Harrop and Turpin 2013) however informal learning in the present study has been operationally defined as the knowledge gained by the respondent students about various architecture subjects through different informal activities conducted in different transitional spaces in the selected colleges.

The change in Informal learning was measured in terms of a difference in knowledge gained by the respondent students in the classroom vs transitional spaces (outside class room) situation. For these students were exposed to various informal learning activities through standardized and tested informal learning/knowledge instruments/tests.

3.4.1 Identification and selection of Informal Learning Indicators

For this purpose, initially, a compressive list of informal learning indicators was prepared. This was based on different courses offered in the architecture degree

program. In all 29 indicators were noted and included in Table 3.10.

Table 3.10 : Identification of Informal Learning Indicators

Sr. No.	Informal Learning Indicators (As Per Review)
1	Graphic design skills
2	Creative skills
3	Architectural design vocabulary
4	Cutting and rendering skills,
5	Freehand drawing
6	Sketching
7	Rendering skills in different medium
8	Use of various media of presentation.
9	Conceptualization
10	Communication skills
11	Self Confidence
12	Time Management
13	Theoretical knowledge.
14	Indoor space & Outdoor Space
15	Organization of spaces
16	Subject Knowledge
17	Representation Skills
18	Self-Organization
19	Architectural spaces
20	Methods of construction
21	Applying finishes, decorations and aesthetic
22	Practices
23	Structural design
24	Integrated design.
25	Graphical presentation of components
26	Adaptability
27	Creative Thinking
28	Intra -Personal Skills
29	Decision Making

After identification for standardization of the battery of indicators, they were referred to judges who had more than 10 years of professional experience in the field of architecture practices and teaching. These indicators were referred to 10 judges for deciding relevance and rating. They were advised to decide relevance and rate on a 3-point continuum scale namely **most relevant, relevant, and not relevant** with 3, 2, and 1 scoring respectively.

Based on the responses of the judges and the rating given by them, mean

score, S.D. and C.V. for each indicator was worked out & presented in Table 3.11.

Table 3.11: Mean score, S.D. and C.V. for Identified Informal learning indicators

Sr. No.	Informal Learning Indicators	Mean	SD	CV
1	Graphic design skills	1.1	0.30	26.50
2	Creative skills	1.2	0.30	27.80
3	Architectural design vocabulary	1.7	0.50	29.60
4	Cutting and rendering skills,	2	0.50	22.40
5	Freehand drawing	2.1	0.80	37.80
6	Sketching	2	0.70	33.90
7	Rendering skills in different medium	1.6	0.50	32.30
8	Use of various media of presentation.	1.6	0.50	31.50
9	Conceptualization	1.8	0.60	35.80
10	Communication skills	1.7	0.50	29.60
11	Self Confidence	2	0.50	22.40
12	Time Management	1.8	0.50	28.30
13	Theoretical knowledge.	1.5	0.60	38.30
14	Indoor Space & Outdoor Space	1.6	0.60	37.50
15	Organization of spaces	2.3	0.80	34.70
16	Subject Know ledge	1.2	0.30	27.80
17	Representation Skills	1.2	0.30	24.20
18	Self-Organization	1.9	0.50	25.30
19	Architectural spaces	2	0.80	37.00
20	Methods of construction	2.3	0.80	34.70
21	Applying finishes, decorations and aesthetic	1.6	0.50	31.50
22	Practices	1.9	0.60	32.50
23	Structural design	1.6	0.60	37.50
24	Integrated design.	1.6	0.50	32.30
25	Graphical presentation of components	1.8	0.50	28.30
26	Adaptability	2	0.50	22.40
27	Creative Thinking	1.7	0.50	29.60
28	Intra -Personal Skills	1.2	0.30	27.80
29	Decision Making	2	0.50	24.60

Informal learning indicators with more than 30 coefficients of variation (C.V.)

were deleted. Thus, finally 16 indicators were selected and presented in Table 3.12

Table 3.12: Selected Informal Learning Indicators

Sr. No.	Informal Learning Indicators	Mean	SD	CV	Rank
1	Cutting and rendering skills,	2	0.5	22.4	1
2	Self Confidence	2	0.5	22.4y	1
3	Architectural spaces	2	0.8	37	1
4	Adaptability	2	0.5	22.4	1
5	Decision Making	2	0.5	24.6	1
6	Self-Organization	1.9	0.5	25.3	2
7	Time Management	1.8	0.5	28.3	3
8	Graphical presentation of components	1.8	0.5	28.3	3
9	Architectural design vocabulary	1.7	0.5	29.6	4
10	Communication skills	1.7	0.5	29.6	4
11	Creative Thinking	1.7	0.5	29.6	4
12	Creative skills	1.2	0.3	27.8	5
13	Subject Knowledge	1.2	0.3	27.8	5
14	Representation Skills	1.2	0.3	24.2	5
15	Intra -Personal Skills	1.2	0.3	27.8	5
16	Graphic design skills	1.1	0.3	26.5	6

This table evaluates different informal learning indicators in transitional spaces based on their **Mean (importance score), Standard Deviation (SD), Coefficient of Variation (CV), and Rank.**

- **Cutting & Rendering Skills, Self-Confidence, Architectural Spaces, Adaptability, and Decision-Making (Mean = 2.0, Rank 1)** These skills are highly valued in informal learning settings. They represent a mix of technical, spatial, and personal growth aspects, which are crucial in design education.
- **Creative Skills, Subject Knowledge, Representation Skills, Intra-Personal Skills (Mean = 1.2, Rank 5), Graphic Design Skills (Mean = 1.1, Rank 6)** are not perceived as ideal for deep theoretical learning.
- **Cutting & Rendering, Self-Confidence, Adaptability (CV = 22.4%)** Most agreement among respondents. **Representation Skills (CV = 24.2%)**

Highly ranked indicators also have low CV, meaning strong consensus on their importance.

Observations:

- Transitional spaces play a key role in fostering adaptability, decision-making, and hands-on creative skills.
- Transitional spaces are best for hands-on learning, adaptability, and confidence-building activities.
- More structured environments may be needed for subject knowledge, graphic design, and representation skills.
- Architectural spaces and creative skills have mixed opinions, meaning these might need better integration into informal learning settings.

Considering the time for research and conducting experiments using selected Informal learning activities, the nine most important informal learning indicators were studied. The List of informal learning indicators studied is as follows in Table 3.13.

Table 3.13: Selected Informal Learning Indicators

Sr.No.	Informal Learning Indicators	Mean	SD	CV	Rank
1	Decision Making	2	0.5	24.6	1
2	Adaptability	2	0.5	22.4	1
3	Self Confidence	2	0.5	22.4	1
4	Cutting and rendering skills,	2	0.5	22.4	1
5	Architectural design vocabulary	1.7	0.5	29.6	4
6	Communication skills	1.7	0.5	29.6	4
7	Subject Knowledge	1.2	0.3	27.8	5
8	Intra -Personal Skills	1.2	0.3	27.8	5
9	Graphic design skills	1.1	0.3	26.5	6

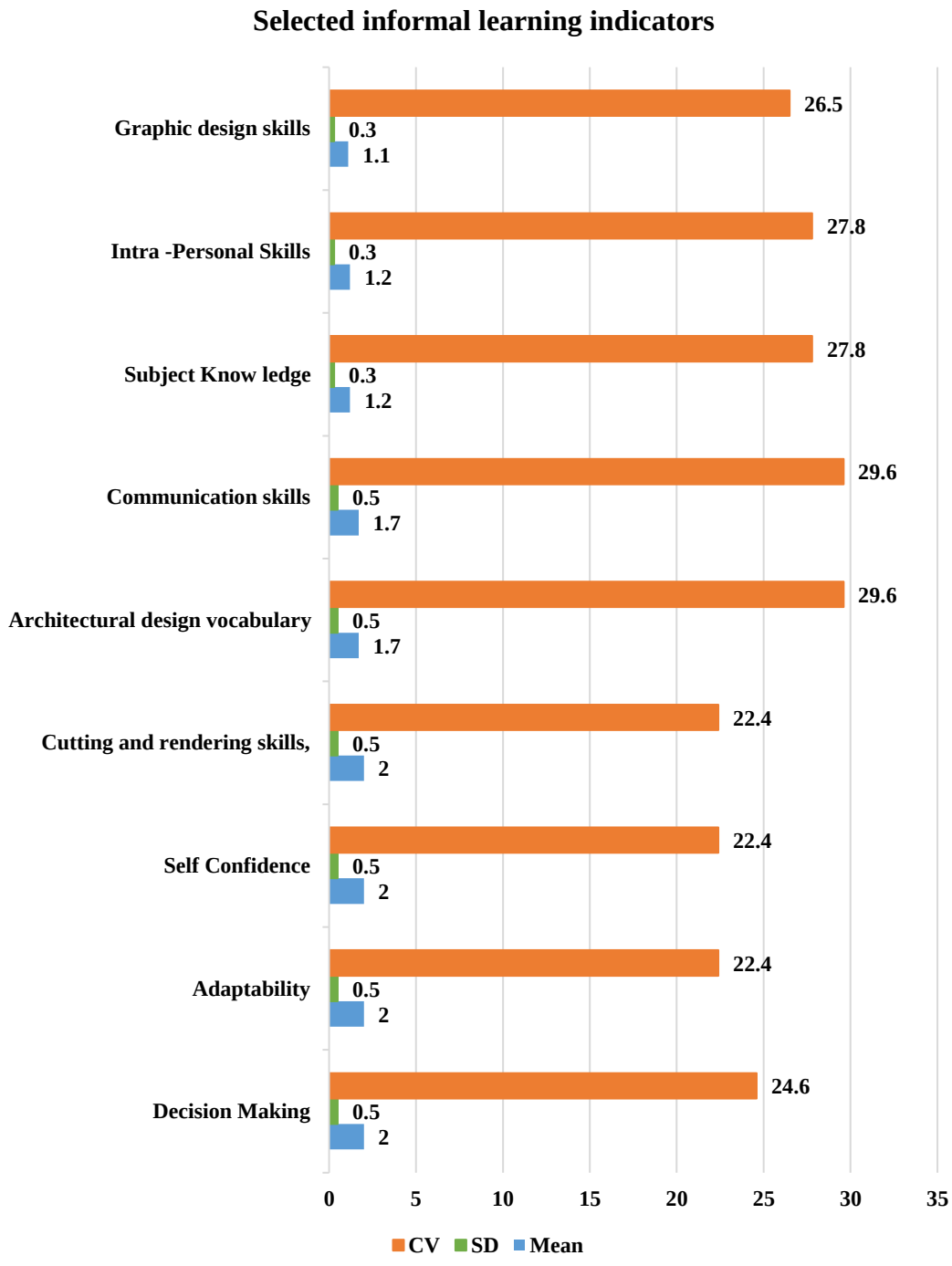


Figure 3.8: Selected Informal Learning Indicator

This table evaluates different informal learning indicators in transitional spaces based on their **Mean (importance score), Standard Deviation (SD), Coefficient of Variation (CV), and Rank.**

- **Cutting & Rendering Skills, Adaptability, Self Confidence, Decision Making, (Mean = 2.0)** These skills are highly valued in informal learning settings. They represent a mix of technical, spatial, and personal growth aspects, which are crucial in design education.
- **Architectural design vocabulary, Communication skills, Intra-Personal Skills (Mean = 1.2), Graphic Design Skills (Mean = 1.1)** are perceived as ideal for deep theoretical learning in transitional spaces.

Observations from table:

- Informal learning plays a key role in fostering adaptability, decision-making, and hands-on creative skills of students.
- Structured environments needed for subject knowledge, graphic design, and representation skills.
- Architectural design vocabulary and creative skills have mixed opinions, meaning these might need better integration into informal learning settings.

Out of sixteen learning indictors, nine learning indictors where selected with the highest ranking for an experiment.

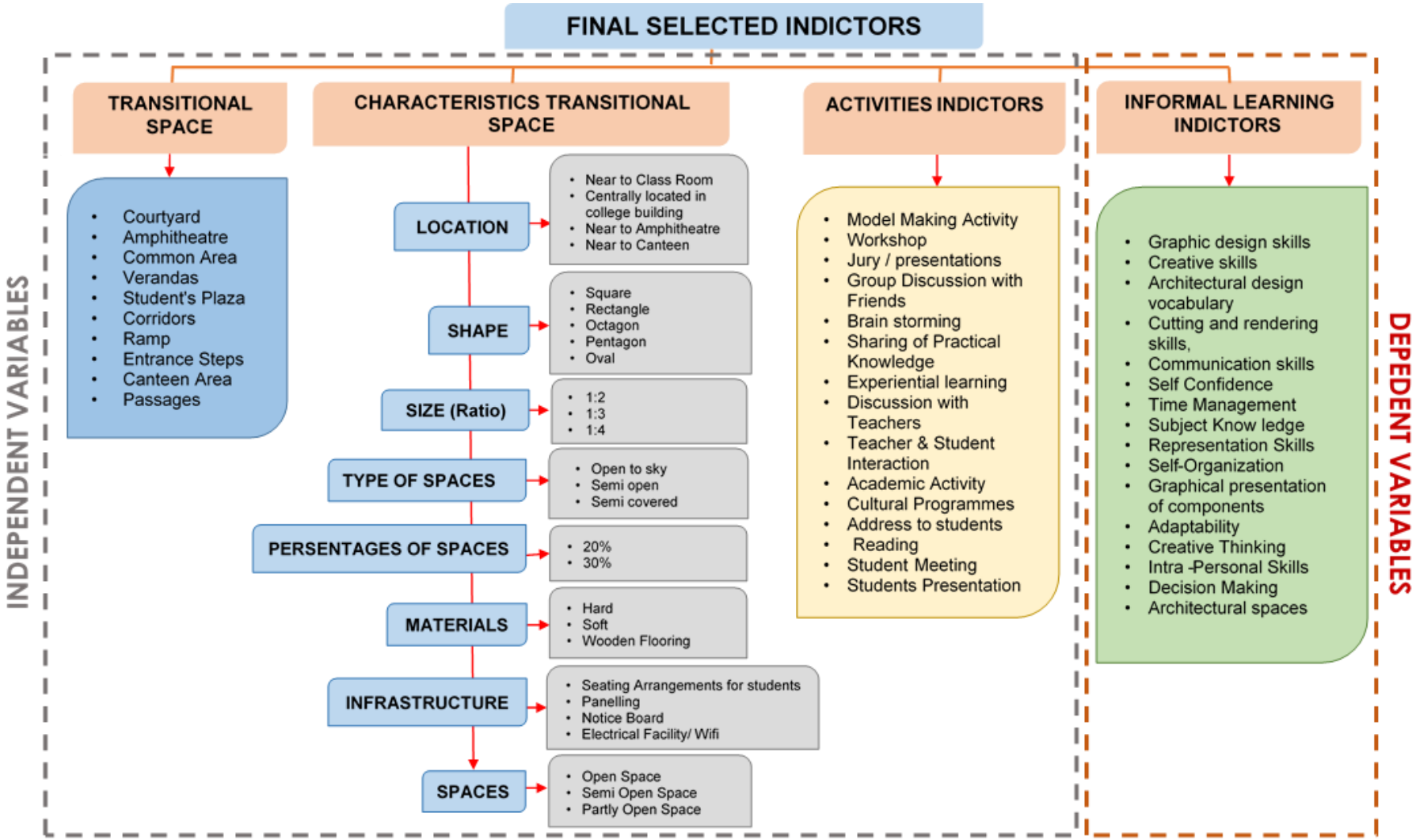


Figure 3.9: Flow Chart of Final selected Indictors

3.4.2 Selected Informal Learning indicators were studied in present research, and they are as follow

Considering the time for research and time frame of students, only three high ranked activities was conducted in selected colleges. The data on nine main learning indictors and sub indictors were used to obtained score from students to work out informal learning index. The details of selected indicators and sub indictors are given below.

Table 3.14: Selected informal learning indicators for architecture design subject

Sr.No.	Activities	Main Learning Indictors	Sub Learning Indicators		
1	**Model Making**	**Graphic Design Skills**	Hand draw sketches	Idea generation	Design Vocabulary
2		**Architecture Vocabulary**	Proportion	Scale	Material
3		**Cutting and Rendering**	Material Selection	Use of Right Tool	Rendering Technique
4	**Workshop**	**Communication skills**	Communicate with clear purpose	Engaging the Audience	Communication with Confidence
5		**Self Confidence**	Visual Graphic	Proceed with Sequence	Nonverbal
6		**Subject Knowledge**	Software Skills	Technical Knowledge	Presentation Ability
7	**Jury/ Presentation**	**Adaptability**	Active Thinking	Proactive	Flexibility
8		**Intra -Personal Skills**	Self-Discipline	Self-Confidence	Open to New Ideas
9		**Decision Making Skills**	Plan of Action	Leadership	Identification of Alternative

3.5 LOCALE AND YEAR OF STUDY

3.5.1 Pune as a Study Area

The study was conducted in Pune considering the following criteria.

1. Pune's reputation as the "Oxford of the East" underscores its status as a prominent educational center in India, particularly for higher education in diverse fields. With a rich academic history and a strong emphasis on quality education, the city attracts students, researchers, and professionals alike. Its prominence as an educational hub makes it an ideal location for studying the relationship between educational policies and professional outcomes, especially in fields such as architecture.
2. Pune's vibrant educational ecosystem in architecture is exemplified by the presence of 25 well-established architecture institutions that cater to a wide range of student demographics. Many of these institutions follow the guidelines set by the Council of Architecture (COA), ensuring that their programs meet national standards for quality and professional readiness. Moreover, several of these institutions are beginning to align with the reforms introduced by the National Education Policy (NEP) 2020, which aims to transform higher education in India. The convergence of these educational frameworks provides an excellent opportunity to analyze how educational policies address the varying needs of students and adequately prepare them for the architecture job market.
3. Pune's 25 well-established architecture institutions are playing a pivotal role in shaping the future of architecture in India. By focusing on interdisciplinary learning, sustainability, and technological innovation, they are equipping students with the skills necessary to succeed in a rapidly changing architectural education. Through this approach, Pune continues to be a critical center for architectural education in India.
4. Pune's architecture institutions cater to a diverse student demographic, which includes individuals from various socioeconomic backgrounds, regional areas, and academic histories. This diversity presents both challenges and opportunities for educational institutions to tailor their programs to meet different needs and expectations.

5. The city’s rapid urbanization, coupled with its emphasis on sustainability, technology, and interdisciplinary collaboration, Pune offers an ideal environment for emerging architects to refine their skills, and make meaningful contributions to the city's architectural evolution and play a transformative role in shaping Pune’s future.
6. "Studying Pune provides challenges and opportunities in architecture education, while its representative nature allows the findings to offer broader implications for urban canters across India."

Table 3.15: Total Colleges in Pune City

Sr. No.	Colleges	Number	Source
1	Private University	**09**	AICTE approved Institutions list
2	Affiliating University	**16**	List of COA (Council of Architecture) approved Institutions (Undergraduate course)
3	Autonomous	**00**	-
	Total Colleges in Pune City	**25**	Institution Approval _ Council of Architecture.pdf

Table 3.16 : Total Population in Pune City

Sr.No.	Population	Total Numbers
1	Students	**8,485**
2	Faculty	**1,696**
3	Practicing Architect	**2,766**

3.5.2 Year of Study

The year of study was 2021-22.

3.6 SAMPLE AND SAMPLING TECHNIQUE

The flow chart of selection of colleges and respondent students exhibited in below flow chart.

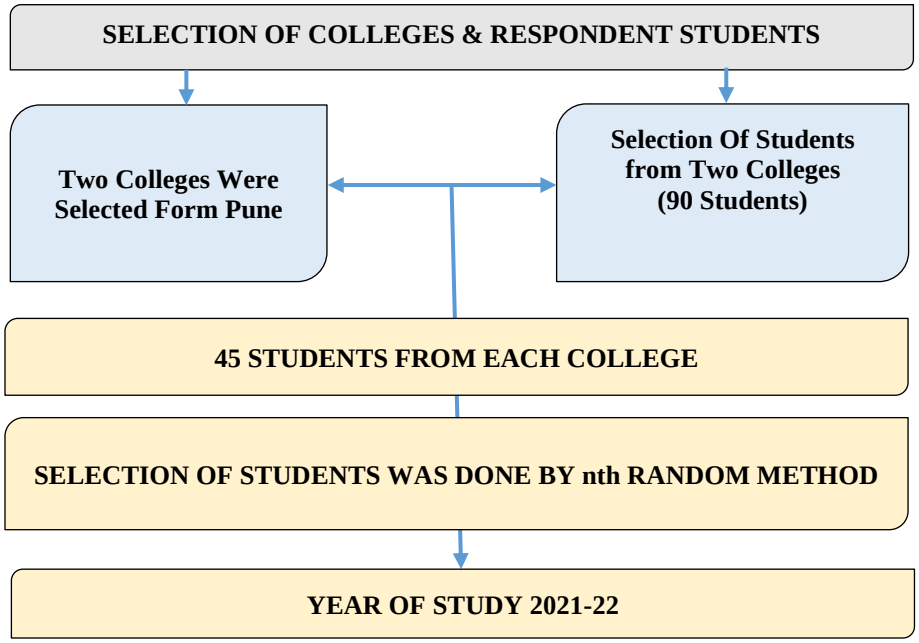


Figure 3.10: Selection of colleges and students

3.6.1 Selection of Colleges

There are 19 colleges affiliated to Pune university. The six colleges were selected based on their intake capacity, recognition by the Council of Architecture, and affiliation with Pune University. Out of the selected six colleges, two colleges were selected on the basis higher level of availability of transitional spaces. The level of degree of availability of transitional spaces was decided on the basis of number of transitional spaces, characteristics of transitional spaces. Each character was judged on three-point continuum namely very good, good and poor with score 3,2 and 1 respectively. In all there were eight characters and maximum obtainable score was 24 and minimum was eight. On the basis of total score obtained by each college they were rated from high to low level of transitional spaces. Two Colleges with highest rating were purposively selected for study. This was done keeping in view time availability for research and the scope of study.

The list of Architecture colleges and their intake capacity is given below.

Table 3.17 : List of Architecture College and Intake Capacity in Pune

Sr. No	Institute Code	Institute Name	Intake
1	6009	B.K. P.S. College of Architecture, Akurdi, Pune	30
2	6261	Dr. Bhanuben Nanavati College of Architecture for Women: Karvenagar, Pune	160
3	6263	Sinhgad College of Architecture Vadgaon Fune	160
4	6533	Marathwada Mitra Mandal's College of Architecture, Pune	80
5	6536	Padmabhushan Vasantdada Patel College of Architecture, Pune	80
6	6537	M.C.E. Society's Allana College of Architecture, Pune	40
7	6538	Padmashree Dr. D Y. Patil College of Architecture, Pune	120
8	6742	Vidya Pratishthan's School of Architecture, Baramati	120
9	6751	ADA's Minerva College of Architecture, Pune	40
10	6807	Ayojan School of Architecture and Design, Pune	80
11	6818	BRICK School of Architecture, Pune	120
12	6837	Anantrao Pawar College of Architecture, Parvati, Pune	80
13	6840	S.B. Patil College of Architecture & Design Nigdi, Pune	120
14	6882	Indira College of Architecture & Design, Pune	40
15	6883	KJ Education Institute Pause= Trinity College of Architecture, Pune	40
16	6896	Shri_ Shivaji Maratha Society's College of Architecture Pune	40
17	6897	Pune District Education Association's College of Architecture, Akurdi, Pune	40
18	6912	Flora College of Architecture, Near Khed-Shivapur, Pune	40
19	6913	Marathwada Mitra Mandals Institute of Environments and Design's College of Architecture, Pune	40

The six colleges were selected based on their intake capacity, recognition by the Council of Architecture, and affiliation with Pune University. The list is given below.

Table 3.18 : Selected Six Colleges for Study

Sr. No.	College Name	Intake
1	Dr. DY Patil College of Architecture, Pune	120
2	Brick College of Architecture, Pune	120
3	S. B. Patil College of Architecture and Design, Pune	120
4	Minerva College Of Architecture, Pune	80
5	D Y Patil School of Architecture, Ambi, Pune	80
6	Padmabhushan Dr. Vasantdada Patil College of Architecture, Pune	80

After selecting colleges for a study, the information on transitional spaces and activities conducted was collected personally in a questionnaire prepared for this purpose. Once the information on the above aspect was obtained, a composite index of transitional spaces was worked out. After calculating the composite index of transitional spaces for each selected college. The college with highest composite index was selected for research study.

3.6.2 A Case Study of Selected Colleges for Working Out Composite Index of Transitional Spaces

This comprehensive approach aims to identify best practices and potential areas for improvement in the design and utilization of transitional spaces within educational institutions. By examining these factors, the study seeks to provide actionable insights that can enhance the overall educational environment and foster a more conducive atmosphere for both teaching and learning. The findings will be instrumental in guiding college administrators and architects in making informed decisions that prioritize student well-being and academic success. By integrating feedback from students and educators, the research will also explore innovative design strategies that promote collaboration and creativity in transitional spaces. The colleges selected for study along with case study are given below

Table 3.19 : Case Study of Selected colleges in Pune

Sr. No.	College Name	Intake
1	Dr. DY Patil College of Architecture, Pune	120
2	Brick College of Architecture, Pune	120
3	S. B. Patil College of Architecture and Design, Pune	120
4	Minerva College Of Architecture, Pune	80
5	D Y Patil School of Architecture, Ambi, Pune	80
6	Padmabhushan Dr. Vasantdada Patil College of Architecture, Pune	80

3.7 CASE STUDY

3.7.1 Dr. D Y Patil College of Architecture, Pune

Dr. D.Y. Patil College of Architecture in Pune is a prestigious institution dedicated to fostering creativity and innovation in the field of architecture. Established in 2000 with the vision of providing quality education, the college offers a comprehensive curriculum that blends theoretical knowledge with practical experience, preparing students for successful careers in architecture and design. With state-of-the-art facilities, experienced faculty, and a vibrant campus life, it aims to cultivate future architects who are not only skilled professionals but also responsible citizens committed to sustainable development.

The infrastructure of Dr. D.Y. Patil College of Architecture in Pune is designed to provide a conducive learning environment for architecture students, featuring modern classrooms, well-equipped studios, and extensive libraries that support both theoretical knowledge and practical skills development. The campus also boasts state-of-the-art facilities such as design workshops, computer labs with the latest software, and collaborative spaces that encourage creativity and innovation among students.

The transitional spaces in Dr. D.Y. Patil College of Architecture in Pune play a crucial role in enhancing the overall learning environment, fostering collaboration and interaction among students and faculty alike. These spaces are thoughtfully

designed to encourage informal gatherings, discussions, and creative exchanges, ultimately contributing to a vibrant academic community.

Table 3.20 : Information about DYPCOA College

Name of College:	**DY Patil College of Architecture, Akurdi, Pune**
Year of Establishment:	2000
Total Area of Campus:	32 Acres
District & State:	Pune, Maharashtra
Admission Intake (First Year)	120
Composite Index of Transitional Space:	79.52%
Composite Index of Activities	79.17%

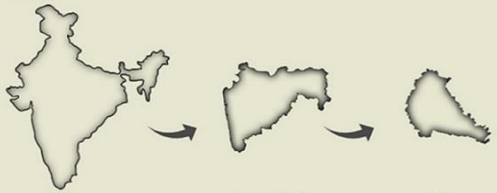
ARCHITECTURAL ANALYSIS

INTRODUCTION

DR DY PATIL COLLEGE OF ARCHITECTURE AKURDI, PUNE MAHARASHTRA IS ESTABLISHED IN THE YEAR 2000. IT IS ONE OF THE MOST FAMOUS ARCHITECTURE COLLEGE IN PUNE, MAHARASHTRA , KNOWN FOR ITS HUGE GREEN CAMPUS AND FIRST CLASS FACILITIES PROVIDING STUDENTS AN ENTHUSIASTIC ENVIRONMENT TO STUDY AND BOND TOGETHER. CAMPUS SIZE IS 5 ACRES. THE INFRASTRUCTURE AROUND THE COLLEGE IS HAVING LANDSCAPE COVERING IT. EACH BLOCK HAS ALL THE REQUIRED FACILITIES AND MORE WHICH INCLUDES LIBRARY, COMPUTER CENTERS, AUDITORIUMS, LABORATORY, AMPHITHEATER, CANTEENS, SPORTS GROUNDS AND TRANSPORTS



LOCATION



INDIA MAHARASHTRA PUNE

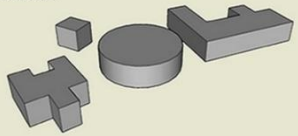
THE COLLEGE IS LOCATED IN AMBI , IN THE PICTURESQUE HILLSIDE OF TALEGAON MIC AREA IN PUNE WHICH IS A LSO REFERRED TO AS "OXFORD OF THE EAST".

APPROACHES

1KM (AKURDI) 1 KM (AKURDI RAILWAY STATION) 24 KM [PUNE AIRPORT]

CONCEPT

The college simply follows the principle 'function follows form'.The blocks are arranged with the sequence of usage of blocks. The shape consist of geometric shapes like rectangle and circle. The college has been given courtyard effect for light and ventilation.



SPACES




PARKING SPACE PERGOLAS FOR DISCUSSIONS AND INTERACTIONS STUDIO

OUTDOOR MATERIAL AND CONSTRUCTION MEUSEUM


STAFF ROOM AT UPPER LEVEL

STAFF ROOM AT LOWER LEVEL



CENTRAL STAIRCASE STUDENT'S PLAZA

S.W.O.T ANALYSIS

STRENGTH -

1. CLASSROOMS ARE QUITE VOLUMETRIC WITH MAXIMUM HEIGHT AND ABUNDANT NATURAL VENTILATION WHICH ALLOWS STUDENT TO WORK AND STUDY FREELY INSIDE THE SPACE.
2. THE COLLEGE HAS AN OPEN CENTRAL STUDENTS PLAZA FOR INTERACTION AND GROUP DISCUSSIONS WHICH HAS BEEN ARRANGED IN DIFFERENT LEVELS TO MANAGE CONTOURS OF THE SITE ALSO ADDING AESTHETIC QUALITY TO IT.
3. THERE IS AN OPEN AMPHITHEATRE INSIDE THE COLLEGE FOR ENJOYING CURRICULUM ACTIVITIES AND A SMALL ARTIFICIAL GARDEN TO INCREASE THE INTERIOR AESTHETICS.

WEAKNESS -

1. DUE TO PARTITION OF CLASSROOMS, AN ISSUE OF NATURAL VENTILATION ARRIVES IN A FEW ROOM.
2. CANTEEN AREA BECOMES CONGESTED DUE TO ITS SMALL SIZE.
3. AS PER REQUIREMENT STANDARDS , WASHROOMS ARE LESS IN NUMBER AS PER THE TOTAL NUMBER OF STUDENTS.
4. ABSENCE OF WORKSHOP SPACES AND LABORATORIES IN THE COLLEGE.

OPPORTUNITIES:

1. IF THE CAMPUS WAS TO BE ONLY DESIGNED SOLELY FOR AN ARCHITECTURE COLLEGE THEN FACADE AND SPACE PLANNING WOULD HAVE BEEN DONE IN A BETTER WAY.
2. NUMBER OF INTERACTIVE SPACES COULD HAVE BEEN INCREASED IF THE OVERALL BUILT AREA OF THE COLLEGE WAS LARGER.

THREATS :

1. DUE TO NO PROPER PLANNING OF LEVEL DRAINAGE, COURT-YARDS AND AMPHITHEATRE OFFEN SUFFERS FROM CLOGGAGE OF RAINWATER.

CONSTRUCTION TECHNOLOGY:

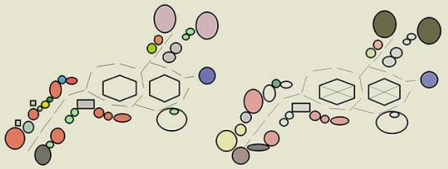
ALL THE BLOCKS OF THE CAMPUS ARE MADE OF RCC CONSTRUCTION AND HENCE THE SAME IS FOR ARCHITECTURE BUILDING. IT'S A G+1 FRAMED STRUCTURE WITH 4.0M HIGH BEAMS AND 0.33M & 0.2M COLUMN WIDTHS. THE FACADE OF THE BUILDING HAS BEEN GIVEN AN INTERESTING REPETITIVE PATTERN OF FIBRE PANELS WITH GLASS BEING THE FOCAL POINT. INSIDES ARE PAINTED WHITE TO MAINTAIN FORMALITY & SIMPLICITY IN THE STRUCTURE WITH WOODEN DOORS AND ALUMINIUM WINDOW OPENINGS. DIMENSIONS OF EACH STUDIO DOOR IS 1.5 x 2.5 M. 3-PANELLED WINDOW IS 1.75x1.5M AND 2-PANELLED WINDOW IS 1.65x1.5 M. MARBLE FLOORINGS ARE USED FOR CORRIDORS & LECTURE HALLS AND COTA TILES FOR STUDIOS. LIBRARY IS PROVIDED WITH FLOOR TO CEILING WINDOW THAT OVERLOOKS A GARDEN. PARTITION WALLS ARE INSTALLED INSIDE CLASSROOMS WHICH ARE MADE OF ALUMINIUM COMPOSITE PANELS

SPECIAL FEATURES


CONCLUSION

1. DUE TO OPPOSITE PLACEMENTS OF ADMINISTRATION OFFICE AND STUDIO CLASSROOM, A HUGE INTERRUPTION OF PRIVACY CAN BE OBSERVED. HENCE ZONING IS VERY NECESSARY BEFORE DESIGNING A STRUCTURE.
2. CIRCULATION SEEMS DISCIPLINED AND ALL THE STUDIOS ARE WELL CONNECTED WITH TRANSITION SPACES.
3. THE COURTYARD IS PROPERLY AND CENTRALLY LOCATED AND IS ACCESSIBLE WITH ALL THE SURROUNDING SPACES. SINCE COURTYARD PLAYS AS AN INTERACTIVE SPACE IT'S IMPORTANT TO LOCATE IT CAREFULLY SO THAT EVERY STAFFS AND STUDENTS CAN ACCESS IT.
4. THE CAFETERIA AREA ISS SMALLER WITH RESPECT TO THE STUDENT CAPACITY OF THE WHOLE BLOCK. CANTEENS MUST BE DESIGNED IN ACCORDANCE WITH THE STUDENT RATIO.
5. STAIRCASES ARE WELL CONNECTED WITH ALL OTHER SPACES. INFACT EXTRA STAIRCASES ARE PROVIDED FOR BETTER AND FASTER ACCESS.
6. FEW CLASSROOMS ARE IN DIRE NEED OF NATURAL DAY LIGHTING AND VENTILATION WHICH GIVES US THE CONCLUSION THAT DESPITE DESIGNING A VOLUPTUOUS SPACE TO ELIMINATE SUFFOCATION FROM THE SCENARIO, IF NO PROPER VENTILATION IS PROVIDED THE ISSUE MIGHT REMAIN.

ZONING / CIRCULATION



GROUND FLOOR CIRCULATION

LEGEND -

- STUDIOS
- PANTRY
- FACULTY ROOM
- MATERIAL AND CONSTRUCTION MUSEUM
- PRINCIPAL'S OFFICE
- TOILETS
- EXAM CONTROL OFFICE
- LIBRARY AND READING AREA
- CANTEEN
- SICK ROOM
- ADMIN OFFICE
- H.O.D. ROOM (M.ARCH)
- KITCHEN
- M.ARCH. CLASSROOMS
- STUDENTS PLAZA & AMPHITHEATER

FISRT FLOOR CIRCULATION

LEGEND -

- STUDIOS
- PANTRY
- FACULTY & MEETING ROOM
- TRAINING AND PLACEMENT OFFICE
- GIRL'S COMMON ROOM
- BOY'S COMMON ROOM
- TOILETS
- COMPUTER CENTRE
- BOARD ROOM & SEMINAR HALL
- LECTURE HALL
- PERMANENT EXHIBITION HALL & SUBMISSION ROOM
- CLIMATOLOGY LAB
- DESIGN CHAIR & ADMISSION CELL
- MODEL MAKING ROOM
- WORKSHOP ROOM

CAMPUS AND ITS LANDSCAPE



BASEMAP OF ARCHITECTURE BLOCK

- ARCHITECTURE COLLEGE BLOCK
- OTHER BLOCKS
- ROADS

PLANS

LEGEND -

- STUDIOS
- PANTRY
- FACULTY ROOM
- MATERIAL AND CONSTRUCTION MUSEUM
- PRINCIPAL'S OFFICE
- TOILETS
- EXAM CONTROL OFFICE
- LIBRARY AND READING AREA
- CANTEEN
- SICK ROOM
- ADMIN OFFICE
- H.O.D. ROOM (M.ARCH)
- KITCHEN
- M.ARCH. CLASSROOMS
- STUDENTS PLAZA & AMPHITHEATER

LEGEND -

- STUDIOS
- PANTRY
- FACULTY & MEETING ROOM
- TRAINING AND PLACEMENT OFFICE
- GIRL'S COMMON ROOM
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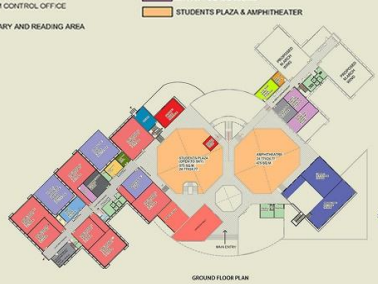
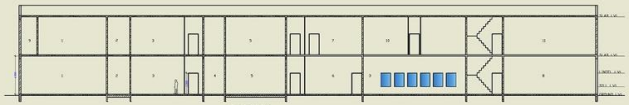
- CLIMATOLOGY LAB
- DESIGN CHAIR & ADMISSION CELL
- MODEL MAKING ROOM
- WORKSHOP ROOM



GROUND FLOOR PLAN

FIRST FLOOR PLAN



SECTION 'XX'

SECTION 'YY'

LEGENDS :

1. Faculty room
2. Toilet
3. Studio
4. Staircase
5. Toilet
6. Material museum
7. Climatology lab
8. Cafeteria
9. Admission cell
10. Computer lab
11. Workshop

1. Boys common room
2. Kitchen
3. Passage
4. Courtyard
5. Courtyard
6. Studio

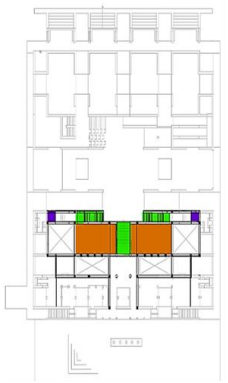
3.7.2 Brick College of Architecture, Pune

SMEF's Brick School of Architecture is a private institution established in 2013 and is located in Pune, Maharashtra. This architecture school comes under the patronage of Savitribai Phule Pune University. The college emphasizes hands-on learning and encourages students to engage in real-world projects, fostering creativity and critical thinking while developing their unique architectural voices. This commitment to experiential learning is further enhanced by collaborations with industry professionals, providing students with invaluable insights and networking opportunities that bridge the gap between academic theory and practical application. The curriculum is designed to be interdisciplinary, allowing students to explore various aspects of architecture, including sustainability, urban planning, and digital fabrication, ensuring they are well-equipped to address the complexities of today's-built environment. This holistic approach not only cultivates technical skills but also instills a deep understanding of the social, cultural, and environmental impacts of architectural decisions.

The faculty at Brick College of Architecture comprises experienced professionals and academics who are dedicated to mentoring students, ensuring they receive personalized guidance throughout their studies. The transitional spaces in Brick College of Architecture. These areas serve as vital connectors between different functional zones, fostering interaction and collaboration while providing a sense of openness and flow throughout the campus.

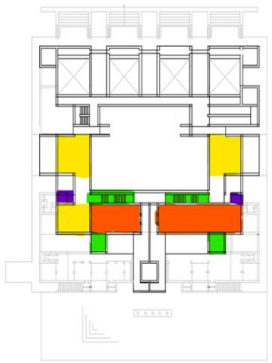
Table 3.21 : Information about BIOAP College

Name of College:	**Brick Institutes of Architecture, Pune**
Year of Establishment:	2013
Total Area of Campus:	10 Acres
District & State:	Pune, Maharashtra
Admission Intake (First Year)	120
Composite Index of Transitional Space:	77.69 %
Composite Index of Activities	67.50 %

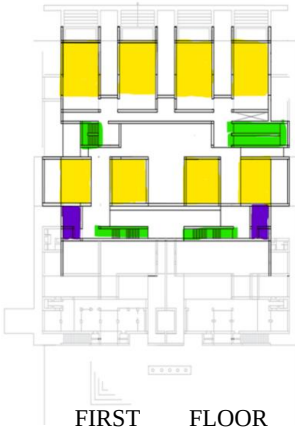


MEZZANINE FLOOR

GROUND FLOOR

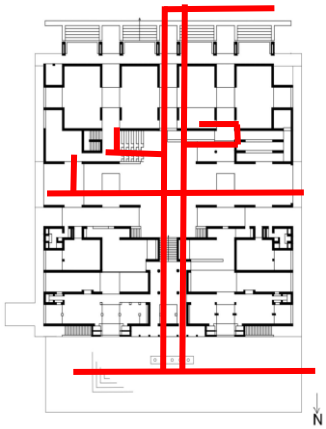


STILT FLOOR PLAN



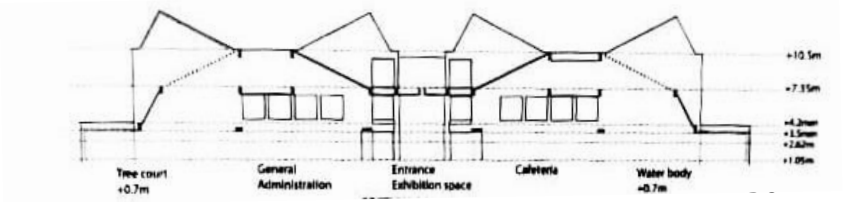
FIRST FLOOR

TRANSITIONAL



INTERNAL CIRCULATION AND

FRONT



SECTION

ROOMS	PHOTOS	SPECIFICATION	NORMS SPECIFIED AREAS	
STUDIO		THERE ARE TOTAL 8 STUDIO ROOMS AND 2 CLASSROOM FOR 5TH YEAR.THE STUDIOS WERE INTERCONNECTED BY ALTERNATE PLACEMENTS OF COURTYARD ADJACENT TO EACH STUDIO.THUS PROVIDED WITH PROPER DAYLIGHT AND NATURAL VENTILATION.TWO LOFTS OF 2.5M WERE PROVIDED AT FRONT AND BACKSIDE OF THE STUDIO FOR MODELS	ACTUAL AREA IS 150 SQ.M	AICTE – 120 SQ.M COA 120 SQ.M
LIBRARY		THE LIBRARY IS DIVIDED IN TWO SECTION E.I. BOOK SHELVES AND MATERIAL LIBRARY. IT IS ALSO PROVIDED WITH COURTYARD AND HAVE PROPER DAYLIGHT AND NATURAL VENTILATION.	ACTUAL AREA IS 158.9 SQ.M	COA : 0.6 SQ.M/ STUDENT AICTE : 150 SQ.M
PRINCIPAL OFFICE		PRINCIPAL CABIN,DIRECTOR ROOM AND CONFERENCE ROOM ARE PLACED IN SINGLE BLOCK THESE THREE CONNECTED TO A COURTYARD .	ACTUAL AREA IS 20 SQ.M	COA : 12 SQM AICTE :30 SQ.M
ADMINISTRATIVE OFFICE		TOTAL SPACE OF ADMINISTRATIVE OFFICE IS PROVIDED FOR 8 PEOPLES AND HAS COURTYARD AT RIGHT SIDE OF IT.	ACTUAL AREA IS 45 SQ.M	COA : 30-60 SQ.M AICTE : 150-300 M
EXHIBITION		IT IS THE PLACE DIVIDED INTO 4 PARTS WHICH DISPLAYS THE SHEET AND MODELS OF THE STUDENTS ,ALSO THE PAINTINGS MADE BY FACULTIES.	ACTUAL AREA IS 30 SQ.M	
TOILETS		WASHROOMS ARE PROVIDED WITH 3 TOILETS AND 4 BASINS,THEY ARE ALSO PROVIDED WITH 2 SKYLIGHTS	ACTUAL AREA IS 16 SQ.M	
WORK SHOP ROOM		THERE ARE TOTAL 3 WORKSHOP ROOMS ONE WAS OPEN WORKSHOP SPACE	ACTUAL AREA 100 SQ.M FOR TOTAL 80 INTAKE	COA : 120 SQ.M AICTE : 120 SQ.M
BOYS COMMON ROOM		BOYS COMMON ROOM WERE LOCATED AT DISTANT FROM MAIN STRUCTURE IN SOUTHWEST DIRECTION	NOT SPECIFIED	
STATIONARY SHOP		AT WEST SIDE OF STRUCTURE STATIONARY SHOP IS LOCATED	AREA 60 SQ.M	

ROOMS	PHOTOS	SPECIFICATION	NORMS SPECIFIED AREAS	
PANTRY		PANTRY WAS LOCATED AT SOUTH SIDE OF FACULTY ROOM	AREA 12-15 SQ.M	
FACULTY ROOM		FACULTY ROOM WAS LOCATED NEAR THE ENTRANCE OF COLLEGE	AREA 90 SQ.M	COA: 5 SQM / PERSON AICTE : 6 SQ.M / PERSON
CANTEEN		CANTEEN IS LOCATED AT EAST SIDE OF BUILDING	AREA 15 - 20 SQ.M	AICTE : 150 SQ.M WITH SEATINGS
INTERIOR DESIGNING BRANCH CLASSROOM		THREE CLASSROOMS ARE PROVIDED FOR INTERIOR DESIGN BRANCH AT FIRST AND SECOND FLOOR		
SITTINGS FOR CANTEEN		INFRONT OF CANTEEN OPEN AREA FOR SITTINGS PROVIDED		
PARKING		NO SPECIFIC PARKING ARRANGEMENT		

3.7.3 S. B. Patil College of Architecture and Design, Pune

S. B. Patil College of Architecture & Design is managed by Pimpri Chinchwad Education Trust (PCET), the society with an aim of promoting quality technical education. The trust has completed 25 years of dedicated services in technical education and runs seven institutions on two campuses in Nigdi and Ravet. SBPCOAD - The Architecture College in Pune started in 2014 at its Nigdi (Akurdi) Campus. The College is approved by the Council of Architecture (COA), Directorate of Technical Education (DTE), Government of Maharashtra, and is affiliated with Savitribai Phule Pune University (SPPU). S. B. Patil College of Architecture and Design, located in Pune, is renowned for its innovative approach to architectural education, emphasizing creativity, sustainability, and hands-on learning experiences. The college offers a comprehensive curriculum that combines theoretical knowledge with practical application, preparing students to tackle the challenges of contemporary architecture and design. With state-of-the-art facilities and a faculty comprised of experienced professionals, the college fosters an environment that encourages exploration and experimentation in various design methodologies.

This commitment to fostering a holistic educational experience ensures that students are not only adept at traditional architectural practices but also embrace emerging technologies and sustainable solutions that address the needs of future generations.

Table 3.22 : Information about SBPSOA College

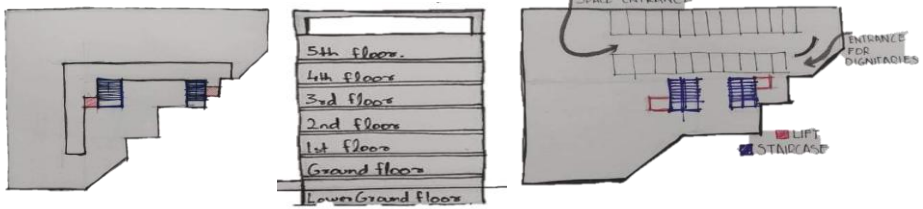
Name of College:	**S.B Patil School of Architecture, Pune**
Year of Establishment:	2014
Total Area of Campus:	28 Acres
District & State:	Pune, Maharashtra
Admission Intake (First Year)	120
Composite Index of Transitional Space:	56.15 %
Composite Index of Activities	42.22 %

S. B. Patil College of Architecture and Design, Pune

INTRODUCTION

Sb patil institute of architecture, is located in akurdi, pimpri, pune.
The building is 5 storeyed. The intake of the students here right now is 80 students. However, the building has a sanction of construction for another floor in case they wish to increase the intake of students. The architecture department here starts from the 2nd all the way up to the 5th floor. The building has studios, staff rooms, boys/girls common rooms, administration block and a few other spaces. The building has followed the norms of an architecture school building very strictly.



COCURRICULAR SPACES

The cocurricular spaces include an activity room where students can sit and interact, work or just hangout. Usually, students sit here and work on their academic sheets after college hours. They have a space designated for a projector which has a number of films related to architecture. Students sit here and watch those films. The college has a huge auditorium which can accommodate 700 people at a time. Seminars for the entire college are conducted here.





The **FLOORS** has spaces designated for the administration department. It includes the general adminiistration block. The principal's office a pantry and a toilet. The floor also has a conference room which accomodates upto 40 people around the table. The library is also on this same floor and it also has a few studios


The **FOURTH FLOOR** has all the 1st and 5th year studios. The peculiar feature about this floor is it has the climatology and the electrical/lighting lab. This is also the floor with the student's activity room

The strength of the classrooms is that atleast one side of any classroom is always made up with huge windows. This results in ample circulation of light


FIFTH FLOOR

The largest part of the fifth floor is occupied by the auditorium. The fifth floor has a number of labs. The floor especially has the staff group discussion rooms where they discuss and relax sometimes. Further if the college increases the intake of student admission, college has the sanction to construct and introduce a sixth floor.



3.7.4 Minerva College of Architecture, Pune

Established in the year 2010 Hillside of Talegaon MIDC area in Pune. An aim to contribute to the society in the stream of art and education. The trust looks forward to serve the society by providing excellent education facilities so as to create world – renowned professionals. The trustees of the trust are established individuals with both knowledge and experience. To fulfill the aim, Minerva College of Architecture was established in year 2010.

The college offers a unique curriculum that integrates theoretical knowledge with practical experience, encouraging students to engage in real-world projects and collaborate with industry professionals. By emphasizing interdisciplinary learning and cutting-edge technology, Minerva College of Architecture ensures that its graduates are well-prepared to make meaningful contributions to the field and address pressing societal needs through innovative design solutions. This commitment to excellence in education fosters a vibrant community of learners who are passionate about shaping the future of architecture and creating spaces that enhance the quality of life for individuals and communities alike. Through a combination of rigorous academic training and practical experience, students are empowered to explore their creative potential while developing a strong foundation in sustainable practices that prioritize environmental stewardship and social responsibility.

The thoughtful arrangement of furniture and open layouts within these areas also facilitates dynamic discussions and group activities, reinforcing the college's commitment to a holistic educational experience.

Table 3.23 : Information about MCOAP College

Name of College:	**Minerva College of Architecture, Pune**
Year of Establishment:	2014
Total Area of Campus:	42 Acres
District & State:	Pune, Maharashtra
Admission Intake (First Year)	120
Composite Index of Transitional Space:	48.20 %
Composite Index of Activities	61.67 %

ARCHITECTURAL ANALYSIS

INTRODUCTION

MINERVA COLLEGE OF ARCHITECTURE IS LOCATED IN THE PICTURESQUE HILLSIDE OF TALEGAON MIDC AREA IN PUNE, WHICH IS ALSO REFERRED TO AS "OXFORD OF THE EAST".ESTABLISHED IN THE YEAR 2010, MINERVA COLLEGE OF ARCHITECTURE OFFERS BACHELOR OF ARCHITECTURE. APPROVED BY COUNCIL OF ARCHITECTURE. EVERYTHING IS DESIGNED AND FACILITATED TO PROVIDE STUDENTS WITH A SPARKS OF INSPIRATION AND EXCELLENCE. FOR STUDENTS WHO SPENDS NEARLY ONE THIRD OF THE DAY IN THE INSTITUTION OVER A PERIOD OF 5 YEARS.

LOCATION

INDIA MAHARASHTRA PUNE

THE COLLEGE IS LOCATED IN AMBI , IN THE PICTURESQUE HILLSIDE OF TALEGAON MIC AREA IN PUNE WHICH IS A LSO REFERRED TO AS "OXFORD OF THE EAST".

APPROACHES

8KM [TALEGOAN DABADHE] 8.7KM [TALEGOAN STATION] 44KM [PUNE AIRPORT]

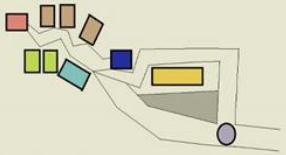
PLANNING

THE DESIGN DERIVES FROM A BASIC FORM OF A VAULTED ROOM, RESPONDS TO PROGRAMMATIC REQUIREMENTS WITH DRAMATIC VARIATIONS ON THE SAME, EXPRESSES SERVANT AND SERVED SPACES BY VOLUMETRIC DIFFERENTIATION AND IS ORDERED BY A PREDETERMINED SET OF DIMENSIONS AND RATIOS.

CONCEPT

IT DERIVES FROM CLIMATICALLY APPROPRIATE FORM, PASSIVE TECHNIQUES OF ACHIEVING ADEQUATE LIGHTING, HEATING AND COOLING, OPTIMISING USER MOVEMENT AND KEEPING THE NATURAL TERRAIN INTACT TO A LARGE EXTENT SO AS TO BELONG TO THE PLACE. IN SPIRIT, IT IS A SUBTLE GREEN DESIGN WITHOUT ASSOCIATED TECHNOLOGICAL OR STYLISTIC TRAPPINGS.

BASEMAP OF ARCHITECTURE BLOCK



- Toilet block
- Admin block
- Library
- Staff room
- studios
- Rest room
- Parking
- Drop off point

ZONING / CIRCULATION

- Pedestrian path open to sky circulation
- Pedestrian path with roof circulation

USP

The design for Minerva college of architecture is done in such a way to maintain contours and is known for it's natural heritage. It's USP is to conserve naturalality with the surrounding spaces and maintaing minimum standards as per requirements.The college properly coinincides with the beauty of nature.

CONSTRUCTION TECHNOLOGY, MATERIALS AND FEATURES

System of parallel bays grows in one direction suitably to contain different functions and curved roof forms give the necessary volume.

Definite structural vocabulary with load bearing composite stone wall, form finish concrete and infill of brick walls with aggregate plaster brings cohesiveness in overall development.

Thermally insulated roofs with terracotta tiles has been incorporated right from the design inception stage.

Gutter for caring off rainwater.Which can be reused for landscaping.

Natural ventilation using 'stack effect', movement of air and ventilation from unsealed opening. Maximizing daylight using skylights. Cross ventilation is also the technique used here.

Local basalt stone walls

Plain glass windows with aluminium panel to get controlled day light in all spaces.

Exposed aggregate finish

Gold green slate tiles

Inner tiles – Kota stone tiles flooring

LANDSCAPE & VEGETATION

Landscaping has been integral part of space making. The sun, shade, shadow, rain, breeze, trees, fruits, flowers, fragrances, birds and now pets set forth a pleasant interactive ambience for 'a complete learning' experience of the student. The garden there acts as a interaction spaces and provides a healthy atmosphere for the students.

S.W.O.T ANALYSIS

Strength -

1. Management of levels has been done swiftly and keeping in consideration the climatic condition of the place barrel vaults were introduced to the structures which also added to aesthetic beauty.
2. Natural greenery is a part of the whole campus and to especially save the trees acute angles were introduced at connecting spaces.
3. To bring natural lighting even inside the corridors, circular openings are made and to avoid unsightly facade, louver shades are provided to hide the ducts of the washrooms.

Weakness -

1. As per COA norms and requirements, the studios and lecture halls are smaller in sizes and in each classroom half the space is wasted.
2. Library and computer center were merged inside a single room which brings disruption.
3. Due to absence of proper zoning many private spaces are often interrupted by outsiders.
4. More natural lighting is required inside each room.

Opportunities -

1. If the campus was to be designed for an architectural institute, then the design could have some changed and perfect structures according to the norms of COA.
2. A play of shadows could be created with better arrangements of blocks and landscape elements.

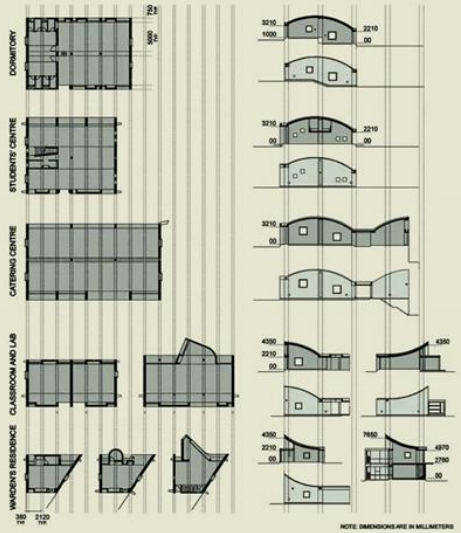
Threats -

1. Unavailability of localities like nearby pharmacies, schools, hostels and hotels. An immediate aid would be impossible.

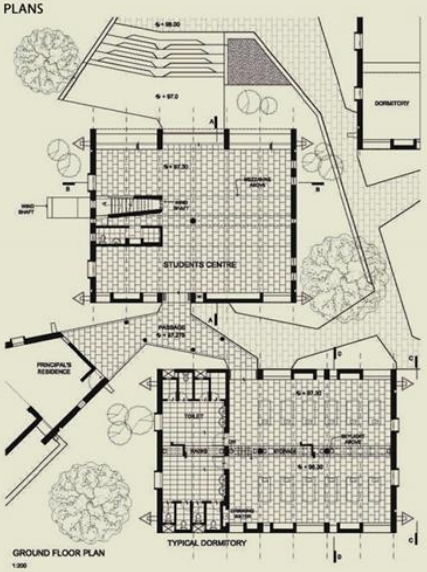
CONCLUSION

1. The key point of this design is the infrastructure is divinely merge with the landscape.
2. The contours are maintained in design.
3. The structure is design in such a way that it can be adapted for any purpose.
4. Cordial connectivity between the spaces.
5. Spacious classrooms for the student to encourage the creativity.
6. The most remarkable feature of this structure is the drainage system is underground.
7. No paint has been applied to give a raw and pure feel of the materials.
8. Not enough extra curricular rooms to feel and learn.
9. Very simple in design if we compare one block with another.
10. No big open ground area to organize some small events or to perform praticals.

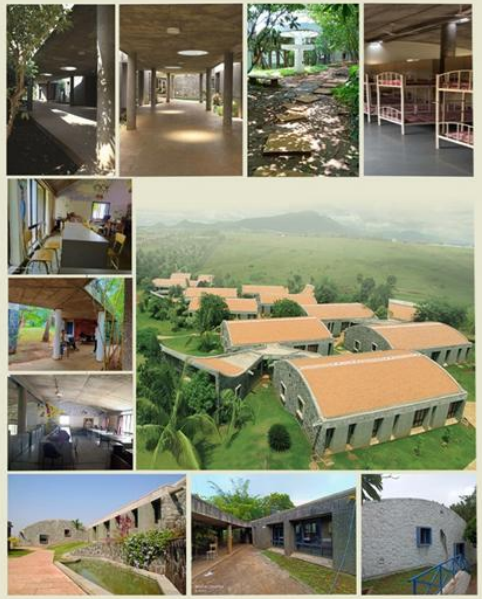
DERIVATIVES OF BUILT FORM



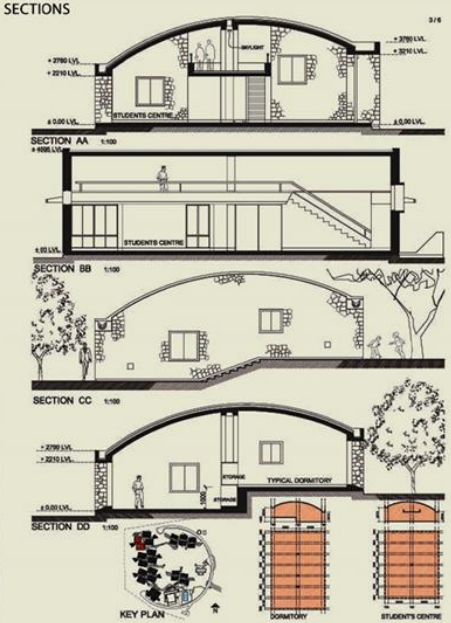
PLANS



SPACES



SECTIONS



3.7.5 D Y Patil School of Architecture, Ambi, Pune

Dr DY Patil College of Architecture Akurdi is a Pune based distinguished Private college which was founded in 2000 under the aegis of Dr. D. Y. Patil Pratishthan and offers an Undergraduate and Postgraduate course in the discipline of Architecture and Construction Management. The college is affiliated to Savitribai Phule Pune University and recognized by the Council of Architecture, New Delhi.

School of Architecture is the one of the most influential, exciting, and innovative architecture schools in Maharashtra and recognized for setting the agenda for what architecture is and could be. Profession of architecture is an eclectic mix of all the fields related to art, culture, human behavior, science, and technology, and hence a true multidisciplinary in nature. Architecture profession goes beyond designing and crafting meaningful physical spaces rather it profoundly influences human health, human behavior and society. An architect is a creator and therefore needs a deep understanding of cross discipline that helps to assimilate the desired architectural expressions for Clientele. School of Architecture is engaged in creating the future architects through the programmes that are designed to explore new challenges with a passion for inventiveness, intelligence and effectiveness. At campus, student centric learning culture provides opportunities for learning and practicing. Education programme at campus are designed to understand 'how' things work and 'find' practical solutions with the use of scientific processes.

Table 3.24: Information about DYPSOA Ambi College

Name of College:	**D Y Patil School of Architecture, Ambi, Pune**
Year of Establishment:	2014
Total Area of Campus:	28 Acres
District & State:	Pune, Maharashtra
Admission Intake (First Year)	120
Composite Index of Transitional Space:	42.22 %
Composite Index of Activities	79.17 %

D Y Patil School of Architecture
Ambi, Pune

LOCATION AND APPROACHES-

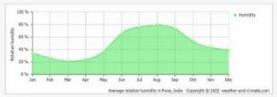
INDIA MAHARASHTRA PUNE

- D. Y. PATIL SCHOOL OF ARCHITECTURE CAME TO EXIST IN THE YEAR 2014-15.
- SITE IS LOCATED IN AMBI, TALEGAON DABHADE, PUNE, MAHARASHTRA
- THE TOTAL SITE AREA IS APPROXIMATELY 32 ACRES.
- THE TOPOGRAPHY OF THE SITE IS IN CONTOUR.
- THE LANDSCAPE OF THE SITE IS WELL MAINTAIN.

APPROACHES

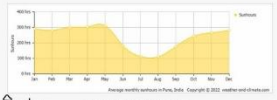
- **BY BUS -** 3.5 KM AWAY FROM THE COLLEGE CAMPUS.
- **BY TRAIN -** 7.2 KM AWAY FROM THE COLLEGE CAMPUS.
- **BY AIR-** 7.2 KM AWAY FROM THE COLLEGE CAMPUS.

CLIMATE - - THE CLIMATE OF AMBI, TALEGAON DABHADE, PUNE IS HOT AND DRY.



AVERAGE HUMIDITY

TALEGAON DABHADE HAS WARM TEMPERATURE YEAR ROUND RANGING BETWEEN 27OC AND 37OC .

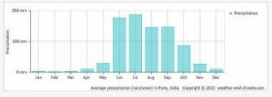


AVERAGE SUNPATH

MAY IS THE SUNNIEST MONTH WITH AN AVERAGE OF 311 HOURS OF SUNSHINE

AVERAGE TEMPERATURE

THE COLDEST MONTH IS JANUARY WITH AN AVERAGE MAXIMUM TEMPERATURE OF 28OC .



AVERAGE PRECIPITATION

JULY TOPS THE WETTEST MONTH LIST WITH 185MM OF RAINFALL .

SPACES -

PRINCIPAL OFFICE LIBRARY ADMINISTRATION STAFF ROOM1 COLUMN

CAFETERIA STAFF ROOM2 ATRIUM PANTRY EXIT

SITE PLAN -

BUILDING ORIENTATION -

- DY PATIL SCHOOL OF ARCHITECTURE IS FACING THE SOUTH DIRECTION . THE STRUCTURE IS SITUATED IN A CONTOUR PLAIN .
- AT THE EAST SIDE MAXIMUM SUN RADIATION TAKES PLACE SO THAT'S WHY THE EAST ELEVATION IS PROVIDED WITH HORIZONTAL SHADES(CHAJJA). THE EAST ELEVATION IS ALSO PROVIDED WITH LOUVRES AS IT HIDES THE TOILET WINDOWS PLACED BEHIND IT . THE NORTH SIDE OF THE STRUCTURE IS PROVIDED WITH HUGE WINDOWS AS MINIMUM SUN RADIATION TAKES PLACE .
- BASICALLY THERE IS A 3M CONTOUR DIFFERENCE ALONG THE CIRCULAR PATH . PARKING IS PROVIDED AT THE SIDE OF THE PATH.
- THE PATH IS PAINTED WITH SOME INTERESTING FEATURES (BASKETBALL GROUND, FOOTBALL GROUND , SNAKE AND LADDER, ETC) WHICH MAKES THE PATH MORE ATTRACTIVE .

D. Y. PATIL SCHOOL OF ARCHITECTURE, AMBI, PUNE

SITE CIRCULATION -

- THE ENTRANCE OF THE CAMPUS IS FROM THE NORTHWEST DIRECTION.
- AS WE MOVE FORWARD , AT THE LEFT SIDE THERE IS DY PATIL INSTITUTE OF MANAGEMENT, BEDSIDE WHICH DY PATIL OF ENGINEERING COLLEGE IS SITUATED .
- MOVING ALONG THE PATH , AT THE RIGHT THERE IS DY PATIL SCHOOL OF ARCHITECTURE, WHICH HAVE PATH ALONG ALL SIDES , MAKING A CIRCULAR CIRCULATION.

PLANNING -

LEGEND -

1. ENTRY
2. STORAGE
3. STAFF ROOM 1
4. KITCHEN AND STORAGE
5. STUDIOS
6. CAFETERIA
7. WOMENS TOILETS
8. MENS TOILETS
9. ATTRIUM
10. STAIRCASE
11. LIFT
12. LIBRARY
13. RESEARCH LAB
14. EXAMINATION ROOM
15. ADMINISTRATION AREA
16. PRINCIPAL ROOM
17. EXIT

STRUCTURE IMAGES -

GROUND FLOOR FIRST FLOOR

STRUCTURE AND SPECIFICATIONS -

STRUCTURE -

- THE STRUCTURE HAVE A RECTANGULAR SHAPE WITH HUGE ATRIUM.
- THE STRUCTURE HAVE A EMPHASIZING RED BROWNISH COLOUR.
- THE EAST ELEVATION HAVE A HUGE ENTRANCE TO THE GROUND FLOOR AND AT BOTH THE SIDES OF THE BUILDING HAVE HUGE LOUVRES ARE PLACED TILL ABOVE FOR THE TOILET'S VENTILATION . LOOK AESTHETICALLY APPEALING .
- THE WINDOWS PROVIDED ARE HUGE WITH CLERESTORY WHICH MAKES THE STRUCTURE LOOK AESTHETICALLY APPEALING
- HUGE DUCTS ARE ATTACHED FROM THE CANTEEN'S KITCHEN TO THE GROUND LEVEL (NORTH ELEVATION).
- LANDSCAPE IS DESIGNED ALONG THE CIRCULAR PATH WHICH BRINGS LIFE TO THE STRUCTURE .

SPECIFICATION -

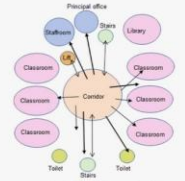
- THE CANTEEN IS A RECTANGULAR ROOM OF 600 SQ.M.
- IT IS A AREA WHERE PEOPLE DINE, GET TOGETHER , STUDY , ETC BASICALLY IT IS USED AS A MULTIPURPOSE AREA.
- HE INTERESTING FACTOR ABOUT THIS CAFÉ IS THAT THE CAFÉ IS INSPIRED FROM INDIAN SPORTSMEN. ATTRACTIVE ABSTRACT SPORTSMEN PAINTINGS WERE ATTACHED ON THE COLUMNS.
- THE LIBRARY IS OF 316 SQ.M WHERE VARIOUS BOOKS OF DIFFERENT BRANCHES ARE KEPT.
- THE COMPUTER LAB IS COMBINED WITH THE LIBRARY AS IT HELPS THE STUDENT TO DO THE RESEARCH CONSECUTIVELY. THE ADMINISTRATION CONSISTS OF 127 SQ.M .
- THE ADMINISTRATION IS DIVIDED INTO THREE PARTS . THE FIRST PART IS VICE PRINCIPAL'S CABIN, SECOND PART IS HEAD OF DEPATMENT'S OFFICE ANF THE THIRD IS DEPARTMENT'S OFFICE.

CIRCULATION -

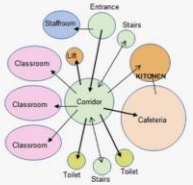
- THE ENTRANCE OF THE COLLEGE IS FROM THE SOUTH DIRECTION . AS WE ENTER , AT THE RIGHT THERE IS STAFFROOM .
- MOVING FORWARD , AT THE LEFT THERE IS AN ANOTHER ENTRANCE . AT THE RIGHT THERE IS A HUGE RECTANGULAR DUCT AND ALONG EVERY SIDE OF THE DUCT 3M CORRIDORS ARE PROVIDED.
- BESIDE THE RIGHT CORRIDOR THERE ARE 3 STUDIOS WHEREAS AT THE LEFT THERE IS A HUGE CANTEEN . AHEAD THE PATH SPLITS IN BOTH DIRECTION .
- AT THE RIGHT THERE IS WOMEN'S TOILET WHEREAS TOWARDS THE LEFT THERE IS MEN'S TOILET. STAIRCASE IS PROVIDED AT THE LEFT SIDE . LIFT IS PROVIDED BESIDE THE STAIRCASE .
- THE EXIT FOR THE GROUND FLOOR IS FROM THE EAST DIRECTION WHICH IS HAVING A HUGE LOBBY (THE SIZE OF THE ABOVE RECTANGULAR DUCT) AND AGAIN THE 3M CORRIDORS FROM EACH SIDE . BOTH THE SIDES ARE HAVING STUDIOS .
- MOVING AHEAD , AT THE LEFT THERE IS PRINCIPAL CABIN , ADMINISTRATION , EXAMINATION ROOM, RESEARCH LABORATORY AND AT THE LEFT THERE IS A LIBRARY . THE SPACES BETWEEN THE STUDIOS IS ALSO USED AS AN CO CURRICULUM ACTIVITY SPACE .

LEGEND -

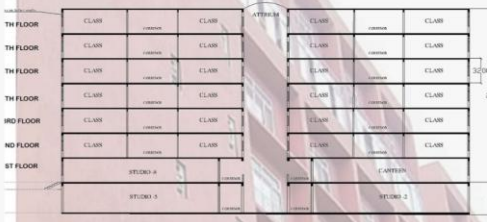
- ADMINISTRATION
- CO-CURICULAR ACTIVITIES
- TRANSITIONAL SPACES
- TOILETS
- ACDEMIC ZONE
- SERVICES



GROUND FLOOR

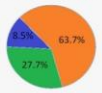


FIRST FLOOR



SECTION -AA'

AREA STATEMENT-



LEGEND -

- BUILT UP SPACES
- TRANSITION SPACES
- CO-CURRICULUM SPACES

VENTILATION -

- THE WINDOWS PROVIDED FOR VENTILATION ARE HUGE WITH CLERESTORY FOR MAXIMUM NATURAL DAYLIGHT.
- MOSTLY CROSS VENTILATION OCCURS IN ALL THE ROOMS.
- DUCT IS PROVIDED JUST BELOW THE ATRIUM FOR LIGHT TO ENTER THE GROUND

BUILT UP SPACES – THE TOTAL AREA IS 14500 SQ.M. BUILT UP SPACES BASICALLY MEANS THE SPACES THAT ARE BUILT LIKE THE CANTEEN, STUDIOS, STAFFROOM, ADMINISTRATION , PANTRY, ETC.

TRANSITION SPACES- THE TOTAL AREA IS 6300 SQ.M. TRANSITION SPACES SUCH AS CORRIDOR , LOBBY , STAIRCASE, LIFT ARE PROVIDED .

CO-CIRRUCULUM ACTIVITY- THE TOTAL AREA IS 1950 SQ.M. THE SPACE ON THE GROUND FLOOR BELOW THE ATRIUM IS USED AS A STUDENT ACTIVITY SPACE SUCH AS CULTURAL EVENT, FUNCTIONS, ETC. THE

INFERANCE-

PROS AND CONS -

PROS -

- NATURAL LIGHT ENTERS FROM THE CENTRAL COURTYARD WHICH REDUCES THE ELECTRICAL LOAD.
- ALL CLASSROOMS AND LIBRARY HAVE ACOUSTIC PANELLING FOR NOISE REDUCTION.
- LARGE SPACE IS PROVIDED FOR A CAFETERIA WHICH MAKES IT A MULTIPURPOSE AREA.
- ELEVATOR FACILITY IS PROVIDED TO ALL THE FLOORS.

CONS -

- ARCHITECTURE DEPARTMENT IS LOCATED AT GROUND FLOOR AND FIRST FLOOR BUT ABOVE FIRST FLOOR SCHOOL AND DESIGN DEPARTMENTS ARE PRESENT WHICH CAUSE
- DUE TO HUGE CORRIDOR PRESENT AT THE CENTRE, ECHO IS CAUSED.
- SERVICES OF THE BUILDING ARE NOT PLANED PROPERLY AND IS VISIBLE IN ALL THE ROOMS.

CONCLUSION-

- ADMINISTRATION , PRINCIPAL OFFICE ARE PLANNED AT GROUND FLOOR AND THE MAIN ENTRANCE TO THE BUILDING IS AT FIRST FLOOR SO WE HAVE TO WALK LONG DISTANCE TO REACH THERE.
- CIRCULATION IS PLANNED PROPERLY SO THAT CIRCULATION TO THE ADMINISTRATION AREA AND ACADEMIC AREA DO NOT INTERRUPT EACH OTHER.
- BUILDING IS SURROUNDED BY BEAUTIFUL LANDSCAPE .
- HIGH NOISE CREATION AND DISTURBANCE CAN BE OBSERVED IN ACADEMIC ZONE.
- ALL THE CAMPUS PLANNING IS DONE IN 6 METER CONTOUR. SO THE SPACES ARE CREATED WITH BEAUTIFUL GREENARY.
- THE CAMPUS LANDSCAPE AND GARDENS ARE VERY WELL MAINTAIN.

3.7.6 Padmabhushan Dr. Vasantdada Patil College of Architecture, Pune

Padmabhushan Dr. Vasantdada Patil College of Architecture (PVPCOA) is managed by Vivekananda Institute of Technology (VIT), a Trust registered under the Societies Registration Act 1860 and Bombay Public Trust Act 1950. The college founded in the year 1995, is affiliated to the Savitribai Phule Pune University (SPPU) and is recognized by the Council of Architecture, New Delhi, the All-India Council for Technical Education, New Delhi and the Director, Technical Education Government of Maharashtra. 1995-2000 The college had humble beginnings in a small space located in premises of a school in Sadashiv Peth & further in the premises, belonging to the trust in Guruwar peth till the year 2000. 2000-2010 Between the year 2000 to 2010 it was located in Hadapsar as one of the floors within the premises of a government building which had a busy Hadapsar road on one side & had a PMPML bus depot on the other. In 2008, the institute was taken over by the current Vivekananda Institute of Technology (VIT) management trust under the guidance of dedicated & passionate faculty members.

In 2010 the institute moved to its current 'Grand' new premises, near Pirangut.

Designing these spaces with careful attention to scale and proportion can also enhance their usability, making them more accessible and enjoyable for a diverse range of users.

Table 3.25 : Information about PVPCOA College

Name of College:	**Padmabhushan Vasantdada Patil College of Architecture, Pirangut, Pune**
Year of Establishment:	1995
Total Area of Campus:	5 Acres
District & State:	Pune, Maharashtra
Admission Intake (First Year)	120
Composite Index of Transitional Space:	42.56 %
Composite Index of Activities	61.11 %

VIT'S PVP COLLEGE OF ARCHITECTURE, PIRANGUT, PUNE

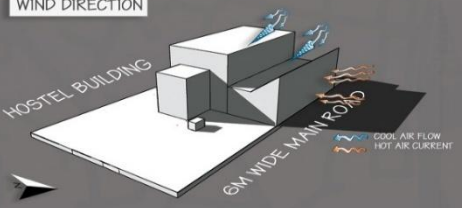
LOCATION

ARCHITECT : AR. VIKAS BHANDARI, AR. SOMA SUNDARAM.
ESTABLISHED YEAR : 2010.
LOCATION : ADITYA NISARG, PIRANGUT, MULSHI, PUNE.
SITE AREA : 5771 SQ. M.
BUILTUP AREA : 1825 SQ. M (approx.).
CLIMATE : HOT AND DRY IN SUMMER AND MODERATE IN WINTERS.

APPROACHES

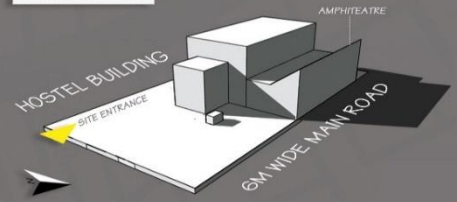
SHIVAJI NAGAR RAIL-WAY STATION 20.7KM | CHANDNI CHOCK BUS STAND 11.5KM | PUNE INTERNATIONAL AIRPORT 29.1KM

WIND DIRECTION



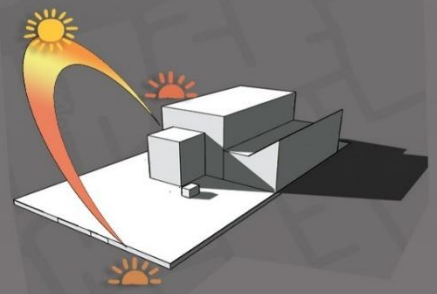
CLIMATE

SURROUNDINGS



SUN PATH

Sun path directed from East to West through South. The apmhitheater is placed to the shaded regions for the events and programmes. Likewise, other spaces are oriented according to the sunpath.



INTERACTIVE SPACE

AMPHITEATRE

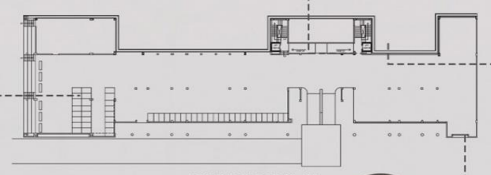
FACADE

The building is surrounded by interactive space and the contour based amphitheater attached to to 2nd floor of building.

INTERNAL PLANNING:

1. The college is planned in Rectangular - linear pattern.
2. The structure consists G+3 Floors, with parking space in the ground floor.
3. The structure is accompanied by Staircases (two in no.) for the vertical movement.
4. Main highlight of this college is the Central Staircase that runs all the way from First Floor to the Third Floor.

ENTRANCE:
The entrance of college should be grand and welcoming, which cannot be seen in this college. Area is small and congested. Security cabin is not provide separately. there is no proper and maintained landscape. Also, there is lack of drainage system.



GROUND FLOOR PLAN

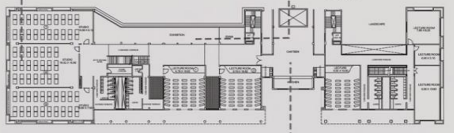
COURTYARD:
Courtyard provided in campus is small with no proper seating area and is not spacious enough as per the intake. Playground is not provided in the campus.

PARKING:
The parking area is spacious and enough as per the users of the building but the security cabin is not provide.

FRONT FACADE:
Facade is kept simple and is made up of exposed concrete.

LECTURE HALL:
Lecture hall is spacious and properly ventilated. Step seating is not provided in the hall.

EXHIBITION HALL:
The exhibition room is spacious, well maintained and the students' works are well displayed which shows the good skill of the students of the college. Artificial methods are used for lighting and ventilation as no window is provided in the room.



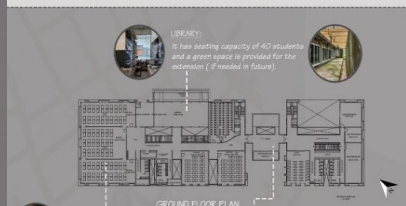
FIRST FLOOR PLAN

CANTEEN:
As the intake of the college is 80 per year, the canteen area is not enough for the UG , PG and faculties. The washing area is provided in the entrance.

PVP College of Architecture sits within the valley of Pirangut Ghat, just 15 mins away from Chandani chowk, Pune. It is located against the backdrop of the green hills along the Kothrud- Mulshi Road. The overall campus planning and design is under the guidance and taken care by Ar.Vikas Bhandari, Mentor, VIT's PVPCOA, Mr. Jitendra Pitailya Secretary , V.I.T. , Ar. Prof. Prasanna Desai, Director PVPCOA & Ar. Isha Umrani, Program Coordinator PG Landscape Architecture PVPCOA.The overall campus planning involves Planning & design as per current & future requirements,accommodating space for services & Strategic Planning.

FEATURES

1. The site of the college is Located in contour area and the planning has been done according to the contours.
2. Linear planning has been done which helps to divide the spaces into admin block, academic block, workshop area.
The structure lacks open spaces such as playground and spacious courtyard.
3. The staircase between second and third floor is the focal point of the building which creates lively atmoshphere in thw college.
4. The amphitheater is well designed which connects to the nature. But it is not covered,which become unusable in the harsh summer and rainy season.
5. The structure has been kept raw and simple.

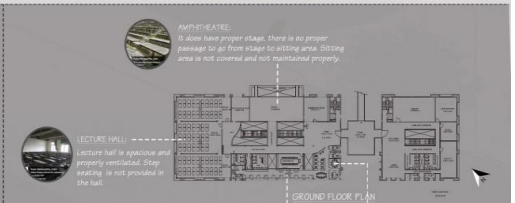


LIBRARY:
It has seating capacity of 40 students and a green space is provided for the extension (if needed in future).

GROUND FLOOR PLAN

LECTURE HALL:
Lecture hall is spacious and properly ventilated. Step seating is not provided in the hall.

STATIONERY ROOM:
It is used as a store room. All extra equipment are stored there.



AMPHITHEATRE:
It does have proper stage, there is no proper passage to go from stage to sitting area. Sitting area is not covered and not maintained properly.

LECTURE HALL:
Lecture hall is spacious and properly ventilated. Step seating is not provided in the hall.

GROUND FLOOR PLAN

FACULTY ROOM:
It has not direct access, it has access through the admin office

ADMIN ROOM:
It is provided in the third floor. Admin office should in the first floor and should have easy access for visitors and old parents, as there no lift in the building.

Table 3.26 : Composite Index of Transitional Spaces in Selected Six Colleges in Pune

Sr. No	Name of College	Semi covered	Near to Amphitheatre	Centrally located in college building	Semi Open space	Open to sky	Partly covered and partly open	Partly Open Space	Seating Arrangements for students	Electrical Facility/ Wifi Zone	Notice Board display	Near to Class Room	Near to Canteen	Semi covered	Centrally located in college building	Semi Open space	Open to sky	Partly Open Space	Corridor/ Passages	Partly covered and partly open
1	**DY Patil college of architecture**	2.5	0	2.6	2.7	0	2.4	2.5	2.8	2.2	2	2.4	2.4	2.5	2.6	2.9	2.6	2.5	2.9	2.4
2	**Brick group of institutes**	2.5	2.5	2.6	2.7	2.6	2.4	2.5	2.8	2.2	2	2.4	2.4	2.5	2.6	2.9	2.6	2.5	2.9	2.4
3	**S.B Patil School of Architecture, Pune**	2.5	2.5	2.6	2.7	2.6	2.4	0	2.8	2.2	2	2.4	1.8	2.5	2.6	2.9	2.6	0	2.9	2.4
4	**Minerva College of Architecture, Pune**	2.5	0	2.6	2.7	2.6	2.4	2.5	2.8	2.2	2	2.4	2.4	2.5	2.6	2.9	2.6	2.5	2.9	2.4
5	**Padmabhushan Vasantdada Patil College of Architecture, Pirangut, Pune**	2.5	0	2.6	2.7	2.6	2.4	2.5	2.8	2.2	2	2.4	2.4	0	2.6	2.9	0	0	2.9	2.4
6	**D.Y Patil School of Architecture Ambi**	2.5	0	0	2.7	2.6	2.4	2.5	2.8	2.2	0	0	0	2.5	2.6	2.9	2.6	2.5	0	2.4

Table 3.27 : Composite Index of Transitional Spaces in Selected Six Colleges in Pune

Rectangle	Square	Octagon	Pentagon	Circle	Hexagon	1:2	1:3	1:4	1:5	1:1	10%	20%	25%	30%	40%	Hard (Tiled)	(Grass)]	Mix (Tiled + Grass)	Level Difference (Material level difference)	Transitional Spaces In College	Composite Index Of Transitional Spaces
2.4	2.3	0	0	0	0	2	2.4	1.7	0	1	0	0	2,7	0	2.2	2.3	2.3	2.6	2.2	66.3	79.52%
2.4	2.3	0	0	0	0	2	2.4	2.3	1.4	1	0	0	0	0	2.8	2.3	1.8	2.6	2.2	73.5	77.69%
1.8	2.3	0	0	2	0	0	0	1.7	0	1	2.3	0	0	0	0	2.3	0	1.8	2.2	59.8	56.15%
2.4	2.3	0	0	0	0	0	2.4	0	0	0	0	0	0	1.5	0	2.3	0	0	0	56.4	48.20%
2.4	2.3	0	0	0	0	0	0	0	1.4	1	2.5	Yes	0	0	0	2.3	0	0	0	49.8	42.56%
2.4	2.3	0	0	0	0	0	0	1.7	0	0	0	0	2.7	0	0	2.3	0	2.6	2.2	49.4	42.22%

Table 3.28 : Composite Index Activities Conducted in Selected Six Colleges

Sr. No	Name of College	Activities Conducted in Transitional spaces [Brain storming]	Group Discussion with Friends	Experiential learning	Model Making Activity	Workshop	[Sharing of Practical Knowledge	Jury / presentations]
1	**DY Patil college of architecture**	Yes	Yes	Yes	Yes	Yes	Yes	Yes
2	**Brick group of institutes**	Yes	Yes	Yes	Yes	Yes	Yes	No
3	**S.B Patil School of Architecture, Pune**	Yes	Yes	Yes	No	Yes	No	Yes
4	**Minerva College of Architecture, Pune**	No	Yes	Yes	Yes	Yes	Yes	No
5	**Padmabhushan Vasantdada Patil College of Architecture, Pirangut, Pune**	Yes	Yes	Yes	Yes	Yes	Yes	Yes
6	**D.Y Patil School of Architecture Ambi**	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Discussion with Teachers	Teacher & Student Interaction	Academic Activity	Cultural Programmes	Address to students	Question & Answer	Student Meeting	Jury/ Presentation	Exchange [Reading	Model making	Workshop	Brain Storming	Total	Composite Index
2.5	2.5	2.3	2.3	2.3	2.2	2.1	2	2.2	2.8	2.7	2.6	28.5	**79.17**
2.5	2.5	2.3	2.3	2.3	2.2	2.1	0	0	2.8	2.7	2.6	24.3	**67.50**
0	2.5	2.3	2.3	0	0	0	0	0	2.8	2.7	2.6	15.2	**42.22**
2.5	2.5	2.3	2.3	2.3	2.2	0	0	0	2.8	2.7	2.6	22.2	**61.67**
2.5	2.5	0	2.3	2.3	2.2	2.1	0	0	2.8	2.7	2.6	22	**61.11**
2.5	2.5	2.3	2.3	2.3	2.2	2.1	2	2.2	2.8	2.7	2.6	28.5	**79.17**

On basis of information obtained from case study of each college for transitional spaces and activities conducted, a composite index of transitional spaces was workout. The college with highest composite index was selected for study. The colleges selected for study are given below.

Table 3.29 : Composite index of all six colleges

Sr. No	Name of College	Year of Establishment	Location District & State	Composite Index of Transitional Spaces	Composite Index Of Activities
1	DY Patil college of architecture	2000	Pune	79.52%	79.17
2	Brick group of institutes	2013	Pune	77.69%	67.50
3	S.B Patil School of Architecture, Pune	2014	Pune	56.15%	42.22
4	Minerva College of Architecture, Pune	2005	Pune	48.20%	61.67
5	Padmabhushan Vasantdada Patil College of Architecture, Pirangut, Pune	1995	Pune	42.56%	61.11
6	D.Y Patil School of Architecture Ambi	2016	Pune	42.22%	79.17

Two colleges with the highest rating were selected for study. This was done keeping in view the time availability for research and the scope of the study.

The Selected Colleges for Experimental Study are shown in Table 3.30 .

Table 3.30 :Selection of Colleges

Sr.No.	Name of selected colleges
1	Dr. D.Y. Patil College of Architecture, Akurdi, Pune
2	Bricks College of Architecture, Pune

3.7.7 Selection of Respondent Students

In all 90 students i.e., 45 students from each college were selected using n^{th} simple random selection method. All the students were from 1st Year B. Arch.

3.8 SELECTION OF VARIABLES AND THEIR MEASUREMENT

3.8.1 Socio-economic and academic profile of the selected respondent students

Under this section variable related to student profiles which are most likely to influence informal learning were selected.

3.8.2 Marks at Entry level

This is operationally defined as the percentage of marks of a student at 12th standard admissible for entry into Architecture college. The selected respondent students were categorized according to their entry-level marks as follows –

Table 3.31 : Marks at entry level

Sr.No.	Categories based on Marks at Entry level (%)
1	Upto 65
2	65 - 80
3	Above 80

3.8.3 Residential status

Among the respondent students selected, some of them were full-time residents of the college hostels and some of them were residing outside the college hostel were studied. They were categorized into two groups i.e., hosteller and dayscholar with scores 2 and 1 for hosteller and dayscholar respectively.

Table 3.32 :Residential Status of Students

Sr.No.	Residential status
1	Hosteller
2	Day scholar

3.8.4 NATA (National Aptitude Test for Architecture) marks at the entry-level

For admission to the Architecture degree program, NATA examination is compulsory. This is operationally defined as the marks of a student in NATA examination. The respondent students were categorized according to their marks on NATA examination. The obtainable marks in NATA are 200 and admissible marks for admission to Architecture college are 70. The following categories were prepared.

Table 3.33 : NATA marks at entry-level

Sr.No.	Categories based on NATA Marks (%)
1	70 - 90
2	90 -120
3	120 - 150
4	Above 150

3.8.5 College Attendance

Punctuality in attendance has been operationally defined as the percentage of consolidated attendance of an individual student in the first year of Architecture courses. The respondent students were categorized as follows.

Table 3.34 : College Attendance of students

Sr.No.	Categories based on Attendance (%)
1	Upto 70
2	70-80
3	Above 80

3.8.6 Economic status

Economic status has been operationally defined as students' total family income in Rr per annum. It was categorized as follows:

Table 3.35 : Economic status of students

Sr.No.	Categories based on Economic status (Rupees per Annum)
1	Upto 7 Lacs
2	7 – 9 Lacs
3	9 – 20 Lacs
4	Above 20 Lacs

3.9 RESEARCH DESIGN

The research was done using experimental research design. The design consisted of conducting experiments on the selected subject activities related to the coursework of the students. The students were exposed in the classroom in formal learning situations and the same group of students were exposed in transitional spaces to the same activities for informal learning experience. The difference between the two measures is the increase/decrease in informal learning.

3.10 RESEARCH EXPERIMENT

The experimental study was to design to assess the effect of informal learning activities on informal learning of students. For this, two sets of academic programs namely formal classroom teaching and informal transitional spaces learning were executed. The subject of Anthropometry was experimented with because it is considered to be most important for categorizing the knowledge of architectural design. The experiment was conducted for about three hrs. 1½ hrs. in class room and 1½ hrs. in transitional spaces. The responses were accompanied by five expert teachers. The details of the experiment were as follows.

To examine the activities performed in class room and Transitional Spaces and its effect on Informal learning on students presented in flow chart.

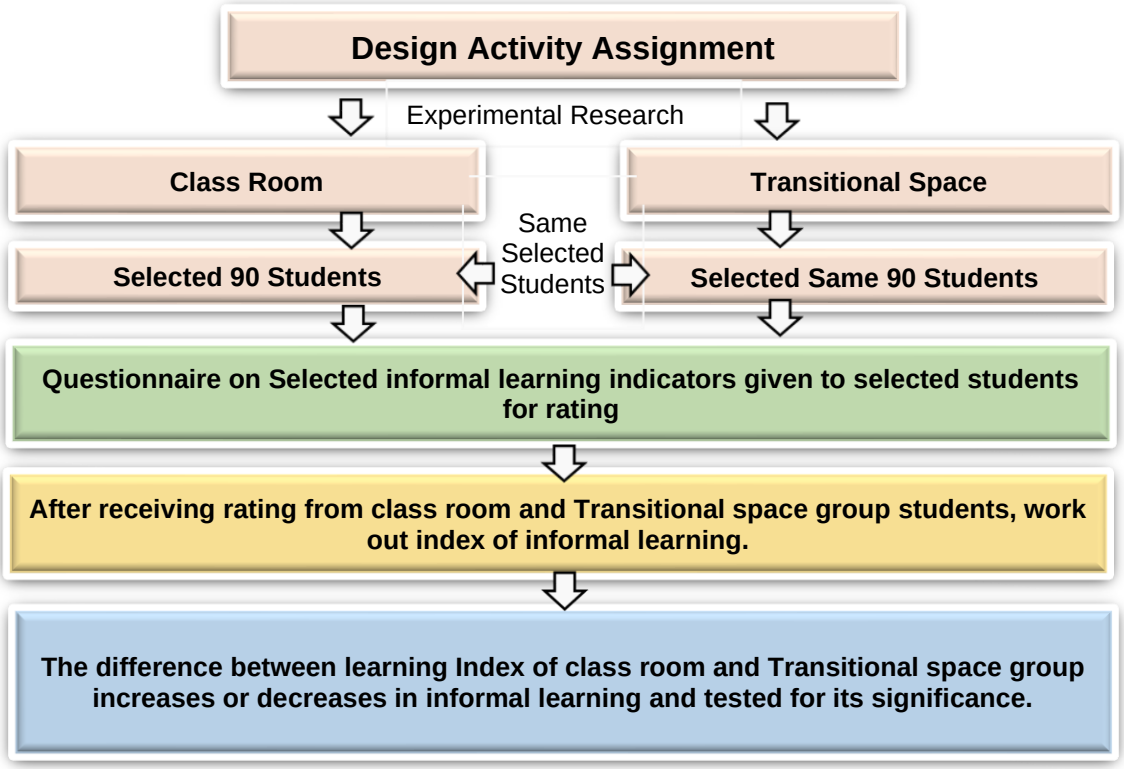


Figure 3.11 :Flow chart of Experimental Learning Activity

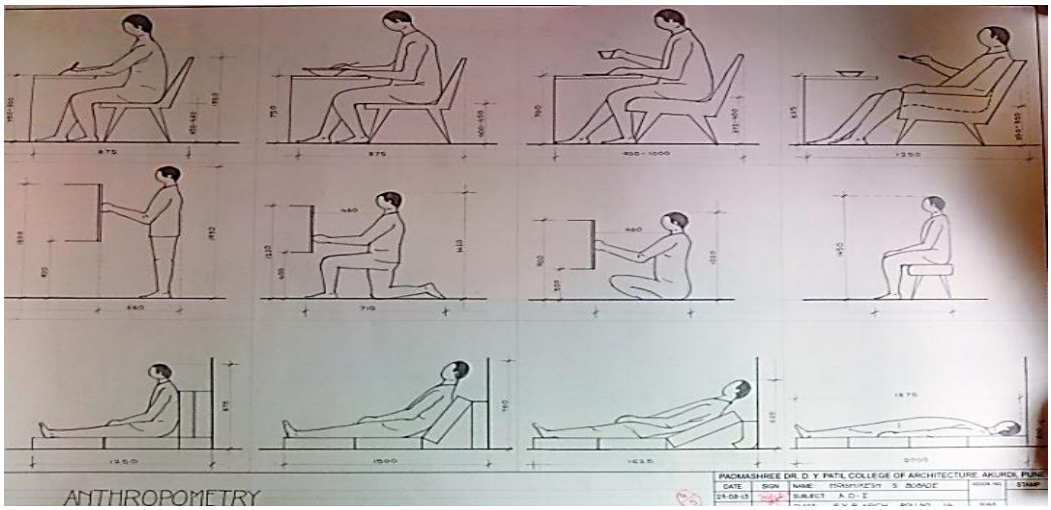
3.10.1 Assignment: - Study of Anthropometry

1. **Objective: -** A study of space requirements for chosen activity through sheets and sketches in the classroom and model making of an anthropometric 1:1 scale in the Transitional space of college.
2. **Experimental Learning Exercise**: Physical measurement of a student to understand the variation position in human beings in which actual measurement of a student is done and model is done in transitional spaces.
3. **Inputs from Teacher:** Theoretical inputs on what Anthropometry is with the help of a PowerPoint presentation. How to use Architectural Design standards.
4. **Expected Output from Students in Class Room:** Drawing sheets with space and Anthropometry. data of human figures with different layout

5. **Expected Output from Students in Transitional Spaces:** Model and sketch, space and the Anthropometry date of the human figure and different layouts concerning sheets prepared in the classroom.

The responses of the students were sought on 5 points continuums i.e., fully increased, increased, partially increased, not increased, and not at all increased with 5,4,3,2 and 1 scores respectively in the schedule given in Annexure 2.

Anthropometry activity conducted in class room



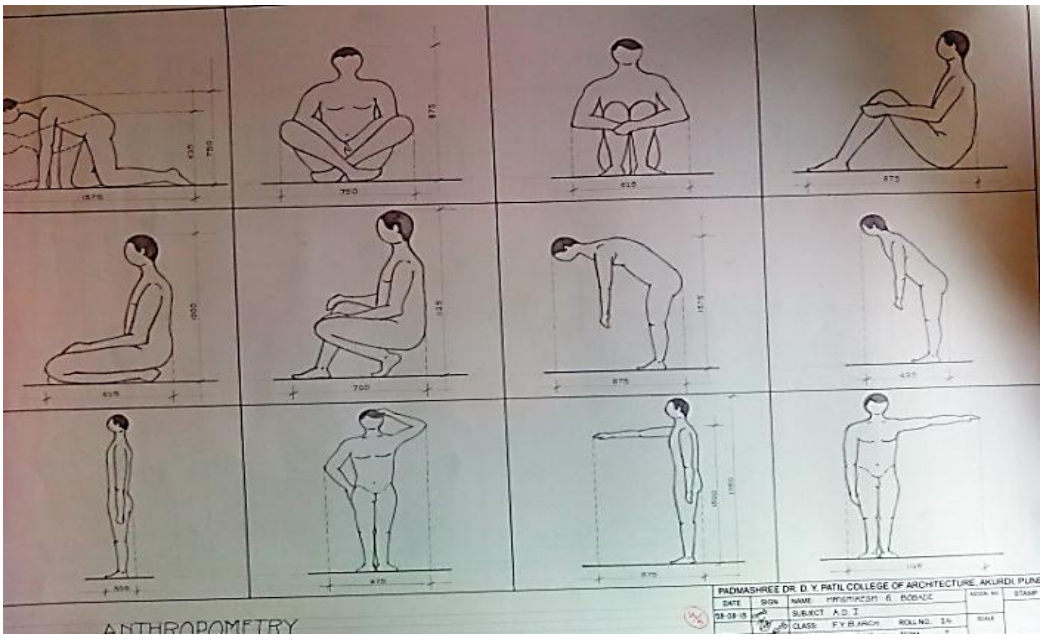


Figure 3.12: Students Classroom Work

Figure 3.13 : Students Classroom work

Activity Conducted in DYPCOA Transitional Space

Figure 3.14: Students work in Transitional space

Activity Conducted in BCOA Transitional Spaces

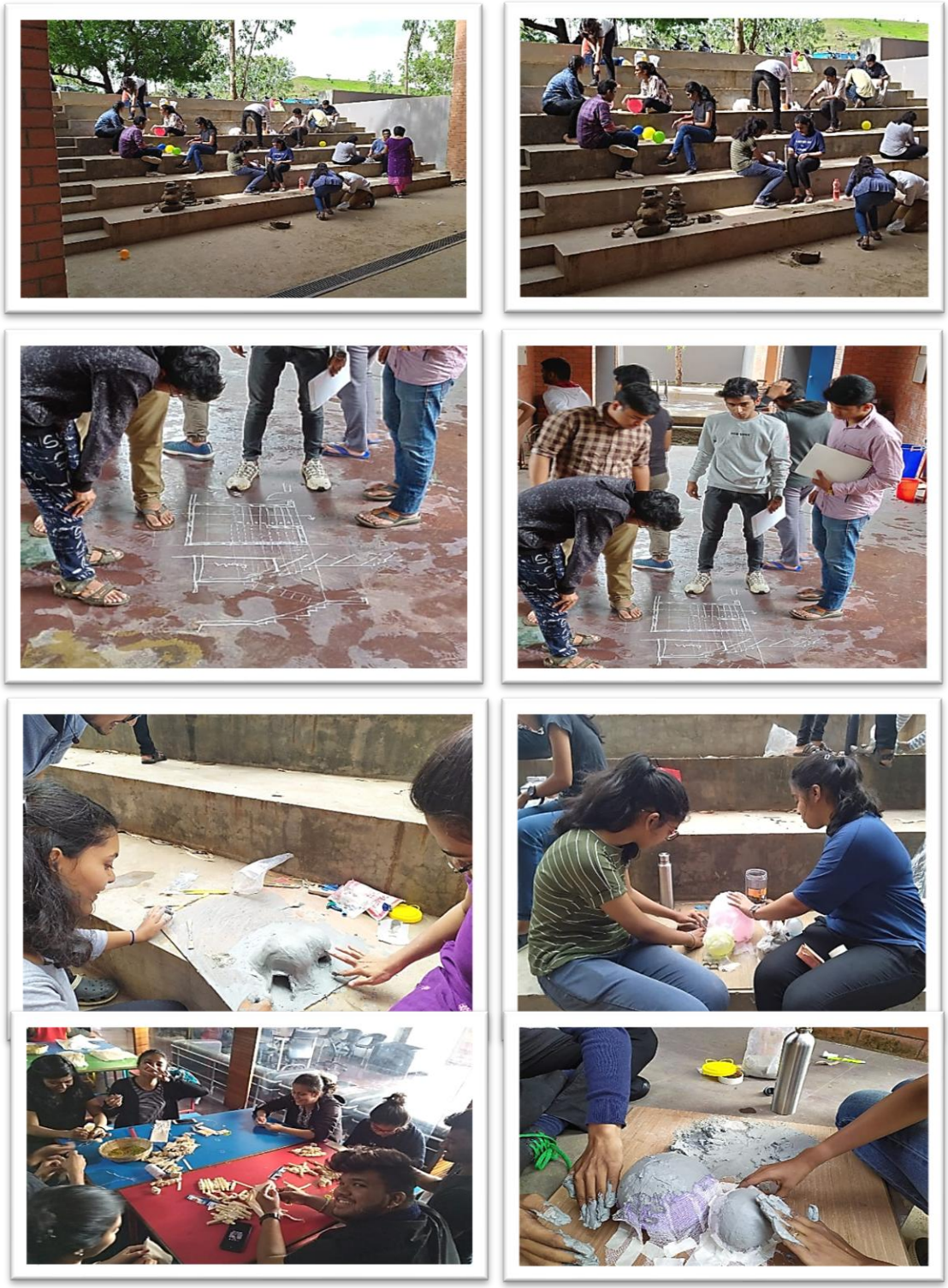


Figure 3.15: Students work in Transitional space

3.11 RELIABILITY AND VALIDITY OF DATA COLLECTED FROM RESEARCH EXPERIMENT

Reliability tells about how learning indicators perform consistently at different times (Taylor 1816). For this purpose, two tests as recommended by (Rensis Likert 1932) were used.

i. Test-Retest
ii. Internal consistency reliability (Split Half Reliability)

3.11.1 Test-Retest

The test was performed by referring selected informal learning indicators to Third-year architecture degree program students who were other than sample students of the study. The test was performed two times within one month to examine the ability of indicators to gain knowledge of the students. The correlation coefficient (r) between two sets of responses was worked out and it was 0.74 which was found to be significant at 1% level of significance.

3.11.2 Internal Consistency Reliability

This measures the internal consistency of the set item forming the scale. The internal consistency reliability is measured using. split-half reliability measures Sixteen learning items were divided into half of eight items each and tested on a group of 16 students separately to record the gain in knowledge. The correlation coefficient (r) between two groups of items was worked out and found to be 0.73 and when tested for its significance, it was significant at 1% level. Thus, the internal consistency reliability was established.

3.11.3 Validity

How precisely a method assesses something is revealed by its validity. A method can be regarded as valid if it gets results that closely match the values found in reality and measures what it is supposed to measure. Two tests namely, constant validity and content validity were established. As the construction of instruments was based on recommended technical procedure, in the present study right from the selection of items to their testing of relevance was followed. Hence the validity was established. Content validity was established as the selection of items related to different architectural subjects was based on the recommendations of expert judges and

experienced teachers in the relevant field.

3.11.4 Reliability of Data by "Cronbach Alpha"

Reliability describes how consistently a technique measures something when we use the same method with the same samples under the same conditions. If not, our measuring method may be faulty, or bias may have entered into our research.

The "Cronbach Alpha" reliability approach was used in the present study among other sorts of data dependability measurement techniques (L.M. Collins, in Encyclopedia of Gerontology, second edition 2007). By comparing the amount of shared variation, or covariance, among the items that make up an instrument to the amount of overall variance, Cronbach's alpha is a method for evaluating reliability. According to the theory, there should be a high degree of correlation among the items concerning the variance if the measure is reliable.

The following table from Gorge and Mallery (2003) is used to interpret **Cronbach's Alpha**

Table 3.36: Cronbach's Alpha Interpretation

Cronbach's Alpha	**Interpretation**
>.9	Excellent
>.8	Good
>.7	Acceptable
>.6	Questionable
>.5	Poor
>.5	Unacceptable

3.12 NORMALITY AND NON-PARAMETRIC TEST

Data on informal learning indicators was collected from experiment. Cronbach's alpha was worked out for each indicator to test their reliability. Further, the relevancy of data collected from students was examined by collecting the data from the same experiment in the same schedule from selected teachers of architecture college.

Once the data was collected from students as well as teachers, it was tested for their normality in behavior using appropriate statistical methods. The descriptive statistics explain that the data is not normally distributed and hence non-parametric tests have been used to test the difference between students and teachers marking.

In the present analysis, the following nine informal learning indicators were studied.

1. Graphic Designing
2. Architecture Vocabulary
4. Cutting and Rendering
5. Adaptability
6. Intra-personal skills
7. Decision Making
8. Communication skills
9. Self confidence
10. Subject knowledge

The analysis done was as follows.

1) To test the significant difference between scores of teachers and students in the classroom as well as in transitional spaces, **Mann Whitney test and Wilcoxon Rank tests** was used for each indicator of informal learning. Wilcoxon test is used to test whether two samples are likely to derive from the same group of people while Mann Whitney test is used when we have independent samples. Both are non-parametric alternatives for the ‘t' test.
2) Kruskal - Walli’s test was used to study the difference between class room score and transitional spaces score. It is used to determine whether or not there is a statically significance difference between median of three or more independent group. The test is non-parametric equivalent of the one-way ANOVA and is typically used when the normality assumption is violated.

3.13 DEVELOPMENT OF INFORMAL LEARNING INDEX

The raw score obtained for each item was multiplied by weight given by expert indicating its importance. In this way weighted score was workout and it was used to compute the weighted informal learning index.

The following formula was used to compute weighted Informal learning index.

Table 3.37 : Weighted informal learning index Formula: -

Weighted informal = learning Index	$\frac{\textbf{Weighted obtained Score}}{\textbf{Weighted obtainable Score}}$	**X100**

The weighted informal learning index indicate knowledge gain / loss of informal learning by each respondent students.

3.14 DISTRIBUTIONAL ANALYSIS

In distributional analysis, five important characteristics of the 90 respondent students have been studied. They are as follows.

1) Entry Level marks
2) Residential status
3) NATA marks at entry level
4) College Attendance
5) Economic status

3.15 RELATIONAL ANALYSIS

3.15.1 Correlates of Informal Learning

The relationship between various characteristics of the respondent students with their learning level both in classroom situations and in selected transitional spaces was studied. The relationship with respondent student's characteristics studied were entry-level marks, residential status, NATA marks, college attendance, and economic status.

3.16 STATICAL METHODS

For analysis of the data besides working out frequencies, percentages, means, combined means, standard deviation, and coefficient of correlation were worked out.

3.16.1 Coefficient of correlation (r)

The correlation coefficient (r) was worked out between entry level marks, residential status, NATA marks at entry level, college Attendance and Economic status with the Informal learning level of the respondent students.

The relevance and significance of the coefficient of correlations (r) was tested with the 't-test at n-2 degree of freedom. The relationship was considered significant if the calculated value of 't' was way greater than the table value at 0.01 0r 0.05 level of probability

3.16.2 Coefficient of Variation (C.V.)

The ratio of the standard deviation to the mean is known as the coefficient of variation. The degree of dispersion around the mean increases linearly with the coefficient of variation and is often given as a percentage.

In general, C.V. between 20-30 is acceptable and greater than 30 is unacceptable. It worked out by the formula **C.V = SD/MeanX100.**

CHAPTER-4: RESULTS AND DISCUSSION

The results and discussions chapter mainly consists of investigation of the transitional spaces in selected architecture colleges. The critical analysis of the data from the institutions, experts, and the respondent students have been collected with the help of a structured interview schedule, online, personally visiting the institutions concerned and through personal interview with the respondent students.

The results obtained in the present investigation are based on empirical evidence and various aspects of transitional spaces in architecture colleges.

The results have been presented under the following heads.

1. Identification of transitional spaces and their ranking.
2. Identification of characteristics of transitional Spaces and their Ranking.
3. Identification of Informal learning activities.
4. Distribution analysis.
5. Relational analysis.

4.1 IDENTIFICATION OF TRANSITIONAL SPACES AND THEIR RANKING

4.1.1 Transitional spaces and their ranking.

The results have been presented in Table 4.1 as follows.

Table 4.1 : Identification of Transitional Spaces and Their Ranking in Colleges

Sr. No.	Transitional Spaces	Rank Based on Mean Score	
		Mean Score	Rank based on Mean Score
1	Courtyard	2.9	I
2	Amphitheatre	2.8	II
3	Common Area	2.8	II
4	Verandas	2.7	IV
5	Student's Plaza	2.5	V
6	Corridors	2.4	VI
7	Ramp	2.4	VII
8	Entrance Steps	2.4	VIII

9	Canteen Area	2.4	IX
10	Passages	2.3	X
Overall	**Mean**	**2.6**	
	SD	**0.48**	
	CV	**18.75**	

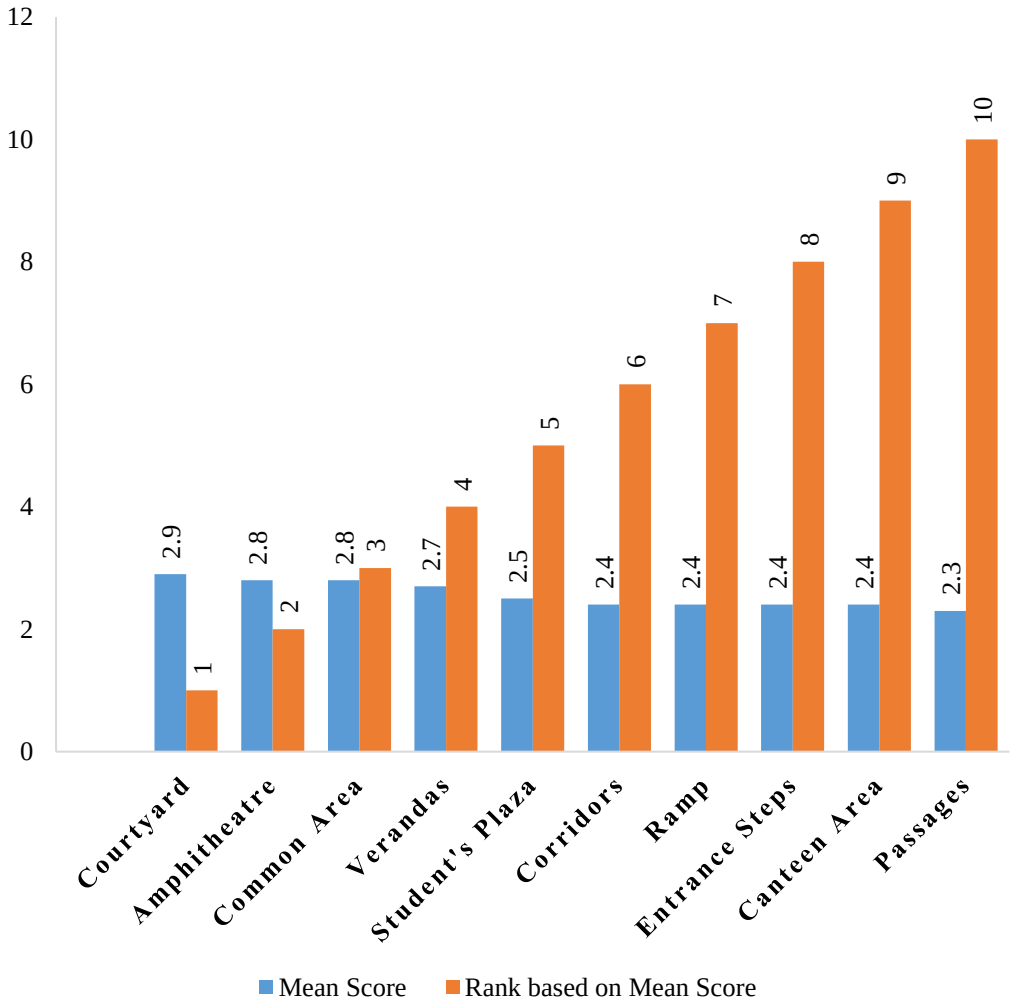


Figure 4.1 : Identification of Transitional Spaces and Their Ranking

It is observed from Table 4.1 that out of twenty transitional spaces primarily identified, ten spaces namely the courtyard, amphitheater, common area, verandas, student plaza, corridors, ramp entrance steps, canteen area and passages were ranked high. Although the ranking based on mean score indicated that courtyard, amphitheater, and common area were ranked highest with 2.9, 2.8 and 2.8 mean scores respectively. However, C.V. (coefficient of variation) for an overall group is

observed to be 18.75 percent which is less than 30 percent and hence acceptable (Reed et al., 2002).

The investigation indicated that there is consistency in the effectiveness of these ten transitional spaces in facilitating informal learning about architectural subjects.

4.2 IDENTIFICATION OF CHARACTERISTICS OF TRANSITIONAL SPACES AND THEIR RANKING.

The characteristics of transitional spaces based on judge's rating in the form of rank order have been studied and presented in Table 4.2 as follows

Table 4.2: Identification of Characteristics of Transitional Spaces and Their Ranking

Sr. No.	Transitional Spaces	Characteristics of Transitional Spaces	Rank Based on Mean Score	
			Mean Score	Rank based on Mean Score
1	Courtyard	Octagon	2.8	I
		20%	2.8	I
		Open to sky	2.8	I
		Seating Arrangements for students	2.8	I
		Centrally located in college building	2.7	II
		Hard	2.7	II
		1:2	2.4	III
		Open Space	2.3	IV
		Electrical Facility/ Wifi	2.2	V
	Overall	**Mean**	**2.6**	
		SD	**0.24**	
		CV	**9.27**	
2	Amphitheatre	Octagon	2.8	I
		Open to sky	2.8	I
		Seating Arrangements for students	2.8	I
		Hard	2.7	II
		01:02	2.4	III
		Open Space	2.3	IV
		Electrical	2.2	V

		Facility/ Wi-Fi		
		Near to Canteen	2	VI
		5%	1.6	VII
	Overall	**Mean**	**2.4**	
		SD	**0.42**	
		CV	**17.55**	
3	Common Area	Notice Board	2.8	I
		Seating Arrangements for students	2.8	I
		20%	2.8	I
		1:4	2.8	I
		Octagon	2.8	I
		Centrally located in college building	2.7	II
		Semi-Open Space	2.7	II
		Paneling	2.7	II
		Hard	2.7	II
		Rectangle	2.4	III
		Electrical Facility/ Wi-Fi	2.2	IV
		At Entrance of Building	2.1	V
		Near to Class Room	2	VI
		1:5	2	VI
		Enclose Space	1.3	VII
		Level Difference	1.3	VII
	Overall	**Mean**	**2.2**	
		SD	**0.52**	
		CV	**23.11**	
4	Verandas	01:04	2.8	I
		20%	2.8	I
		Seating Arrangements for students	2.8	I
		Notice Board	2.8	I
		Centrally located in college building	2.7	II
		Semi-Open Space	2.7	II
		Paneling	2.7	II

		Hard	2.7	II
		Near to Amphitheatre	2.4	III
		Rectangle	2.4	III
		1:3	2.4	III
		Near to Canteen	2.4	III
		Electrical Facility/ Wi-Fi	2.2	IV
		At Entrance of Building	2.1	V
		Near to Class Room	2	VI
		1:5	2	VI
		Enclose Space	1.3	VII
		Level Difference	1.3	VII
	overall	**Mean**	**2.4**	
		SD	**0.48**	
		CV	**20.14**	
5	Student's Plaza	Octagon	2.8	I
		20%	2.8	I
		Open to sky	2.8	I
		Seating Arrangements for students	2.8	I
		Centrally located in college building	2.7	II
		Hard	2.7	II
		01:02	2.4	III
		Rectangle	2.4	III
		Open Space	2.3	IV
		Electrical Facility/ Wifi	2.2	V
		Square	1.8	VI
	Overall	**Mean**	**2.5**	
		SD	**0.33**	
		CV	**13.03**	
6	Corridors	01:04	2.8	I
		20%	2.8	I
		Seating Arrangements for students	2.8	I
		Notice Board	2.8	I
		Centrally	2.7	II

		located in college building		
		Semi-Open Space	2.7	II
		Hard	2.7	II
		Paneling	2.7	II
		Rectangle	2.4	III
		01:03	2.4	III
		Near to Amphitheatre	2.4	III
		Electrical Facility/ Wi-Fi	2.2	IV
		At Entrance of Building	2.1	V
		Near to Class Room	2	VI
		Near to Canteen	2	VI
		1:5	2	VI
		Level Difference	1.3	VII
		Enclose Space	1.3	VII
	Overall	**Mean**	**2.3**	
		SD	**0.48**	
		CV	**20.64**	
7	Ramp	Semi-open	2.9	I
		Open to sky	2.8	II
		Semi-Open Space	2.7	III
		Hard	2.7	III
		Rectangle	2.4	IV
		Open Space	2.3	V
		Covered	2.2	VI
		At Entrance of Building	2.1	VII
		1:5	2	VIII
		5%	1.6	IX
	Overall	**Mean**	**2.4**	
		SD	**0.41**	
		CV	**17.35**	
8	Entrance Steps	Semi-open	2.9	I
		Open to sky	2.8	II
		Hard	2.7	III
		Semi-Open Space	2.7	III
		Semi covered	2.5	IV
		Rectangle	2.4	V

		Open Space	2.3	VI
		At Entrance of Building	2.1	VII
		1:5	2	VIII
		5%	1.6	IX
	Overall	**Mean**	**2.4**	
		SD	**0.41**	
		CV	**17.01**	
9	Canteen Area	Semi-open	2.9	I
		Open to sky	2.8	II
		Centrally located in college building	2.7	III
		Semi-Open Space	2.7	III
		Partly Open Space	2.5	IV
		Near to Amphitheatre	2.4	V
		Open Space	2.3	VI
		Mix	2.1	VII
		Covered	2.2	VIII
		1:5	2	IX
		5%	1.6	X
	Overall	Mean	2.4	
		SD	0.39	
		CV	16.46	
10	Passage	01:04	2.8	I
		20%	2.8	I
		Seating Arrangements for students	2.8	I
		Notice Board	2.8	I
		Hard	2.7	II
		Paneling	2.7	II
		Centrally located in college building	2.7	II
		Rectangle	2.4	III
		01:03	2.4	III
		Near to Amphitheatre	2.4	III
		Near to Canteen	2.4	III
		Electrical Facility/ Wi-Fi	2.2	IV

		At Entrance of Building	2.1	V
		Near to Class Room	2	VI
		01:05	1.6	VII
		Level Difference	1.3	VIII
		Enclose Space	1.3	VIII
	Overall	**Mean**	**2.3**	
		SD	**0.51**	
		CV	**21.96**	

It is observed from Table 4.2 that ten transitional spaces namely, courtyard, amphitheater, common area, veranda, student's plaza, corridors ramp, entrance steps, canteen area and passages were ranked highest. The investigation indicated that each transitional space has different characteristics.

The characteristics of different selected transitional spaces are as follows.

4.2.1 Courtyard

The courtyard space was observed to be an octagon with 20 percent area of the total space and open to sky. It should be centrally located in a college building with a hard surface and 1: 2 ratio of length to breadth, open space with electrical facility and WIFI. The mean score of these characteristics indicated that octagon shape, 20 percent area, open to sky and availability of seating arrangement for students ranked highest with 2.8 mean score. The C.V. indicated that there is no significant variation among the different characteristics.

4.2.2 Amphitheatre

The second important transitional space is the Amphitheatre. The “amphi " of an amphitheater means “On both sides” in Greek. Open-air theatres that allow spectators to sit on both sides of the action. Today, the word amphitheater is used to mean any large, semi-circular theatre space. The characteristics preferred were octagon in size, open to sky, and hard surface with seating arrangement for students. amphitheater, near to the canteen, 1: 2 proportions, electrical with WIFI facilities are also important. Among nine characteristics, octagon in size, open to sky, seating. arrangement for students and hard surface ranked I, II and III with an average mean score was 2.8,

2.8, 2.8 and 2.7 respectively. The characteristics like length and breadth, open to sky, open space, electrical facilities and near to canteen were in the mean score range of 2.0 to 2.4. The C.V. which indicates variation in characteristics is found to be 17.55 percent. Which indicates the acceptable variation between different characteristics.

4.2.3 Common area

The Common area is another important transitional space not limited to stairwells, lounges, study rooms TV rooms etc. Its characteristics are generally, octagon in size, centrally located in college, semi-open space, near to classroom, availability of Notice Board facilities and equipped with electrical and WIFI facilities. When these characteristics were ranked based on mean score assigned by experts, they were ranked I & II, respectively. The mean score of other Characteristics was in the range of 1.3 to 2.4 indicating less importance. The C.V. of all characteristics together worked out to 21.62 percent which is within the acceptable limit thereby indicating less variation in rank given by experts.

4.2.4 Veranda's

The ideal characteristics of the veranda were observed to be centrally located in a college building with seating arrangements for students and 20 percent area of the total space. Further, it should be semi-open with a Hard surface and in the proportion of 1:4 & a rectangle in shape. The electrical with Wifi facilities is also provided. The mean score of these characteristics ranged from 1.3 to 2.8. The C.V. for all the Characteristics was 20.14. indicating less variation in ranking by experts.

4.2.5 Student's plaza

The student plaza is recognized as a sizable space where paving serves as a principal component for several functional and atmospheric zones. The ideal characteristics of student plaza are octagon, open to sky, seating arrangement, 20 % area and hard surface. The length and breadth should be in the range of 1:2 with electrical & wifi facilities. The mean score of octagons, 20 percent area, open to sky and seating arrangement was 2.8 out of 3.0 indicating their importance. The C.V. worked out. to 13.03 percent which is within the acceptable limit.

4.2.6 Corridors

A corridor is a type of passageway or hallway that connects various parts of a structure that are frequently narrow compared to its length. The characteristics of the corridor were centrally located in the college building having availability of notice board, seating arrangement for students. The area under corridors may be 20 % of the total space with 1:4 length and breadth dimensions. The other characteristics were semi-open space, hard surface, near to classroom and Canteen. Of all 18 characteristics identified these four were ranked highest i.e., 1:4, 20 %, seating arrangement and Notice Board with a mean score 2.8. Therefore, it indicates that these are the most important characteristics of corridors. The rest of the characteristics. were in the mean score range of 1.3 to 2.7. The C.V. worked out to 20.64 percent indicating less variation in rating the characteristics in by expects.

4.2.7 Ramp

Ramps are sloped between vertical floors, and buildings' interior and exterior paths are both utilized. It is used as an aid for raising or lowering a load. The ideal characteristics were observed to be semi-open, open to sky, semi-open space and hard surface. The mean score of these characteristics indicated that semi-open, open to sky, semi-open space and hard surface ranked highest with 2.9 to 2.7 respectively. The other characteristics like rectangle, covered, at entrance of a building, 1: 5 dimensions. and 5% area covered was in the range 0f 1.6 to 2.4 mean score. The C.V. was 17.35 percent within the acceptable limit and expressed less variation in rating by experts.

4.2.8 Entrance Steps

Architecturally, an entrance is an opening, such as a door or gate, that allows access to a place such as a building or room. The important characteristics are semi-open, open to sky, hard surface and semi-open spaces with mean scores 2.9, 2.8 ,2.7 and 2.7 respectively. The other characteristics were in the mean score range of 1.6 to 2.5 indicating least important. The C.V. was 17.01 indicating less variation in rating the characters by experts.

4.2.9 Canteen Area

A restaurant is provided by an organization such as a college for their students. There are 11 characteristics. high are identified and sent to judges for their rating. The characteristics with high mean scores were semi-open, open to sky, centrally located in college building and semi-open. The mean scores obtained were 2.9, 2.8, 2.7 and 2.7 out of 3.0 respectively and ranked I, II and III. The other characteristics were in the mean score range of 1.6 to 2.5 indicating relatively less important. The C.V. Worked out to 16.46 percent.

4.2.10 Passage

In all 17 characteristics were identified and ranked based on ranking by experts. The highest rank was obtained by 1: 4 length and breadth dimensions followed by 20 % area of the total space, seating arrangement for students and availability of notice board. The mean score of these characteristics was 2.8. The mean score of hard surfaces, paneling, centrally located in college buildings was 2.7. The other characteristics were in the mean score range of 1.3 to 2.4 indicating comparatively less important. The C.V. was 21.96 which is within the acceptable range.

On the whole, it is observed that the Courtyard and Student Plaza are most effective in promoting the informal learning of the respondent students in Architecture. The highest mean scores of 2.6 and 2.5 respectively have been observed.

As regards characteristics of transitional spaces, the shape, open-to-sky, seating arrangement for students, and 1: 4 length to width ratio are the most important characteristics of transitional spaces (mean score 2.8)

It is therefore concluded that in Architecture colleges for promoting informal learning the transitional spaces with these characteristics were relatively more effective.

4.3 IDENTIFICATION OF INFORMAL LEARNING ACTIVITIES.

Different transitional Spaces provide opportunities for informal learning of architecture subjects equally different learning activities performed in these spaces may also provide and promote informal learning. The same has been studied herein with a comparative analysis between transitional spaces and activities performed.

The results are presented in Table 4.3 as follows.

Table 4.3: Informal Learning Activities Performed in Different Transitional Spaces with Ranking

Sr.No.	Activities Performed	Courtyard		Amphitheatre		Common Area		Verandas		Student's Plaza		Corridors		Ramp		Entrance Steps		Canteen Area		Passages			
		Mean	Rank	Mean	Rank	Mean	Rank	Mean	Rank	Mean	Rank	Mean	Rank	Mean	Rank	Mean	Rank	Mean	Rank	Mean	Rank	Mean	Rank
1	Model Making Activity	2.4	I	_	_	2.4	II	_	_	2.4	II	_	_	_	_	_	_	_	_	_	_	2.4	II
2	Workshop	2.2	II	2.2	III	2.2	III	_	_	2.2	III	2.2	II	_	_	_	_	_	_	2.2	II	2.2	III
3	Jury/presentations	_	_	_	_	_	_	_	_	1.7	III	_	_	_	_	_	_	_	_	_	_	1.7	VI
4	Discussion with Teachers	1.8	IV	_	_	1.8	IV	1.8	II	_	_	1.8	III	1.8	I	1.8	I	1.8	I	1.8	IV	1.8	V
5	Student Meeting	1.8	V	_	_	1.8	V	1.8	III	1.8	VI	1.8	III	1.8	I	1.8	I	1.8	I	1.8	IV	1.8	V
6	Sharing of Practical Knowledge	1.7	V	_	_	1.7	V	1.7	III	_	_	1.7	IV	1.7	II	_	_	1.7	II	1.7	VI	1.7	VI
7	Experiential learning	_	_	1.7	IV	1.7	V	_	_	1.7	IV	_	_	_	_	_	_	_	_	1.7	V	1.7	VI
8	Students Presentation	_	_	2.5	I	2.5	I	2.5	I	2.5	I	2.5	I	_	_	_	_	_	_	2.5	I	2.5	I
9	Reading	_	_	_	_	1	VI	1	VI	1	VI	1	V	_	_	1	II	_	_	1	VII	1	VII
10	Academic Activity	2.1	III	2.1	III	_	_	_	_	_	_	_	_	_	_	_	_	_	_	2.1	III	2.1	IV
	Mean	2.0	II	2.13	I	1.89	IV	1.76	VIII	1.90	III	1.83	VI	1.77	VII	1.53	IX	1.77	VII	1.85	V		

Table 4.3 explains the comparative analysis of the transitional spaces indicating that amphitheater ranked (I) while common area and passages ranked (II) and (III) respectively in their importance for learning according to the judges ranking. As regards activities performed, out of ten important activities identified, student presentation. ranked (I) while model making and workshops ranked (II) in facilitating informal learning.

It is further revealed that relatively more activities were performed in the common area followed by the student plaza and courtyard. However, their importance was relatively less as compared to the amphitheater. It indicates that rather than the number of activities, the effectiveness of each activity performed in the transitional space is relatively more important. Also, when activities were compared in which student's involvement is relatively more viz student's presentation, model making and workshop play a higher effective role in providing informal learning.

4.4 DISTRIBUTIONAL ANALYSIS.

4.4.1 Students Profile

In distributional analysis, five important characteristics of the 90 respondent students have been studied. The results are presented as follows.

4.4.2 Entry level marks

This is operationally defined as the percentage of marks of a student at 12th standard admissible for entry into Architecture college.

The distribution of respondent's students according to their entry-level marks is shown in Table 4.4.

Table 4.4: Distribution of Respondent Students According to Entry-Level Marks

Sr.No.	Entry Level Mark Category (%)	No of Students	Percentage
1	Upto 65	13	14.44
2	65 to 80	55	61.11
3	Above 80	22	24.44
	Total	**90**	**100.00**
	Mean	**72.12**	
	SD	**7.52**	
	CV	**10.43**	

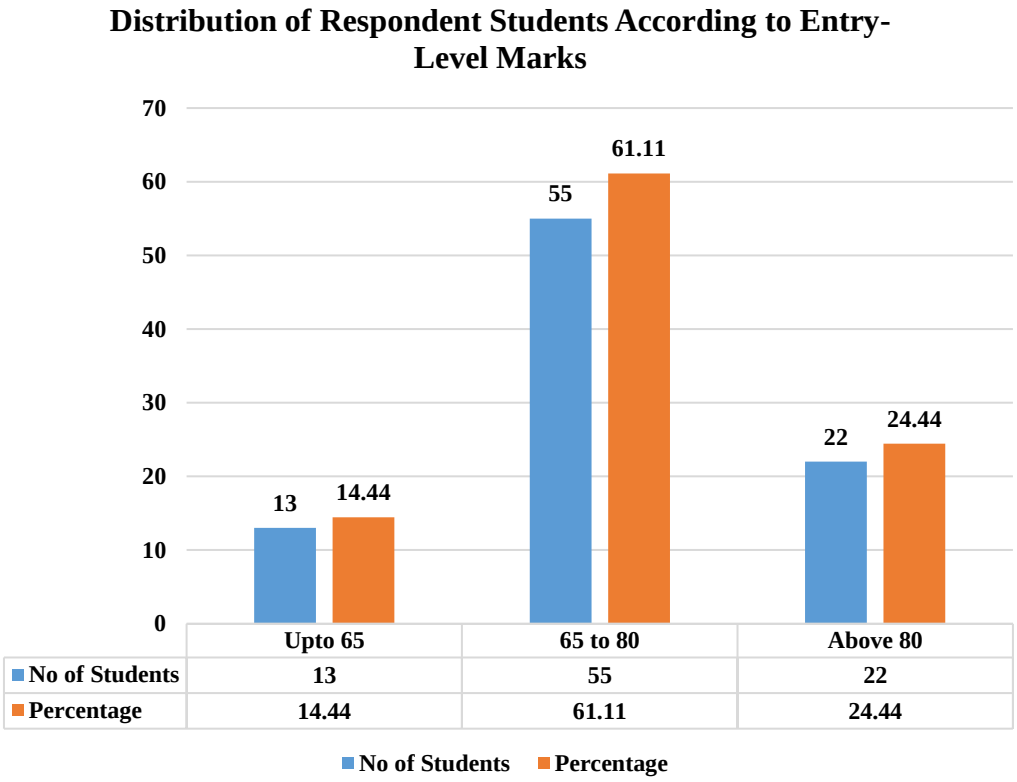


Figure 4.2: Distribution of Respondent Students According to Entry-Level Marks

It is observed from Table 4.4 that a relatively higher number of students i.e. 61.11% had 65 to 80 percent marks at entry level in the architecture college followed by 24.44% of respondent students with above 80% marks. The average level of percentage of marks at the entry-level was 72.12%. The C.V. was found to be 10.43%. indicating significant variation among the entry-level marks of the respondent students.

4.4.3 Residential status.

Among the selected respondent students, some of them are full-time residents in the college hostel referred to as hostlers and some of them are residing outside the college hostel called day scholars. To study the distribution of hostellers and day scholar's students, they were categorized into two groups with score 2 and 1 for Hostellers and Day scholars respectively as shown in table 4.5.

Table 4.5 : Distribution of Respondent Students According to Residential Status

Sr.No.	Residential Status Category (Students)	No of Students	Percentage
1	Hosteller	54	60.00
2	Day scholar	36	40.00
	Total	**90**	**100.00**
	Mean	**1.8**	
	SD	**0.49**	
	CV	**27.22**	

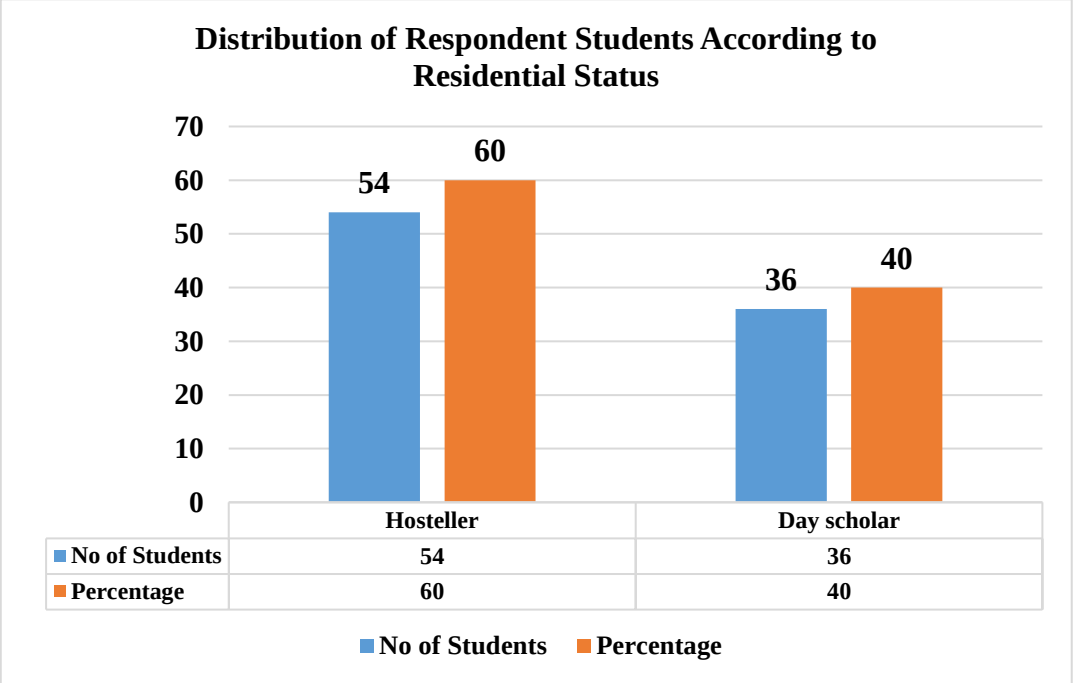


Figure 4.3: Distribution of Respondent Students According to Residential Status

It is observed from Table 4.5 that a relatively higher proportion of selected students i.e., 60 % were hostelers while the remaining 40 % were day scholars. Hostelers were found to be residing in college hostels while day scholars were residing outside of the college premises.

4.4.4 NATA marks at entry level.

For admission to an Architecture college, NATA (National Aptitude Test in Architecture) examination is compulsory. This is operationally defined as the marks of a student in NATA examination. The respondent students were categorized according to their NATA marks shown in Table 4.6.

Table 4.6 : Distribution of Respondent Students According to Mark Obtained in NATA Examination

Sr.No.	Mark Obtained in NATA Exam Category	No of Students	Percentage
1	70 - 90	4	4.44
2	90 - 120	44	48.89
3	120 - 150	41	45.56
4	Above 150	1	1.11
	Total	**90**	**100**
	Mean	**117.42**	
	SD	**16.99**	
	CV	**14.47**	

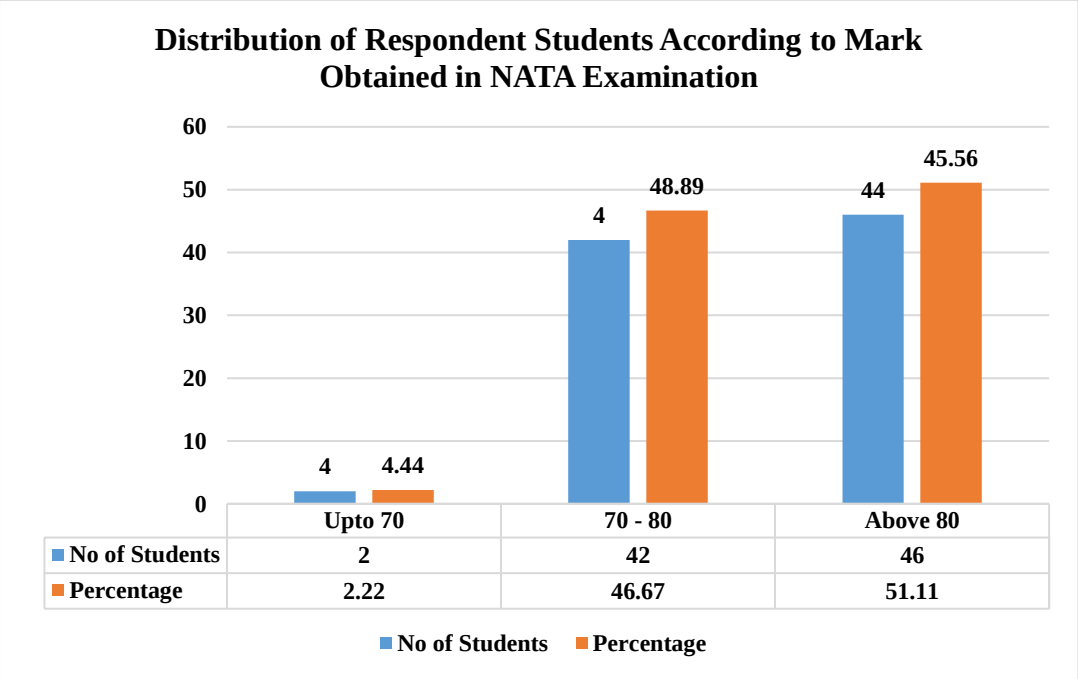


Figure 4.4: Distribution of Respondent Students According to Mark Obtained in NATA Examination

It is observed from Table 4.6 that half of the respondent students, i.e. 48.89 % were in the range of 90 to 120 marks. While a slightly low proportion i.e., 45.56 % of respondent students were in the range of 120-150 marks at NATA examination. Only 1.11 % of students are in the range of above 150 marks. The mean level marks obtained by respondent students in the NATA examination were 117.42.

4.4.5 College Attendance of Respondent Students.

Punctuality in attendance refers to the percentage of attendance of an individual

student in attending different lectures. The respondent students were categorized based on percentage of attendance & shown in Table 4.7.

Table 4.7: Distribution of Respondent Students According to College Attendance

Sr.No.	Percentage Attendance Category	No of Students	Percentage
1	Upto 70	2	2.22
2	70 - 80	42	46.67
3	Above 80	46	51.11
	Total	**90**	**100.00**
	Mean	**82.5**	
	SD	**7.1**	
	CV	**8.60**	

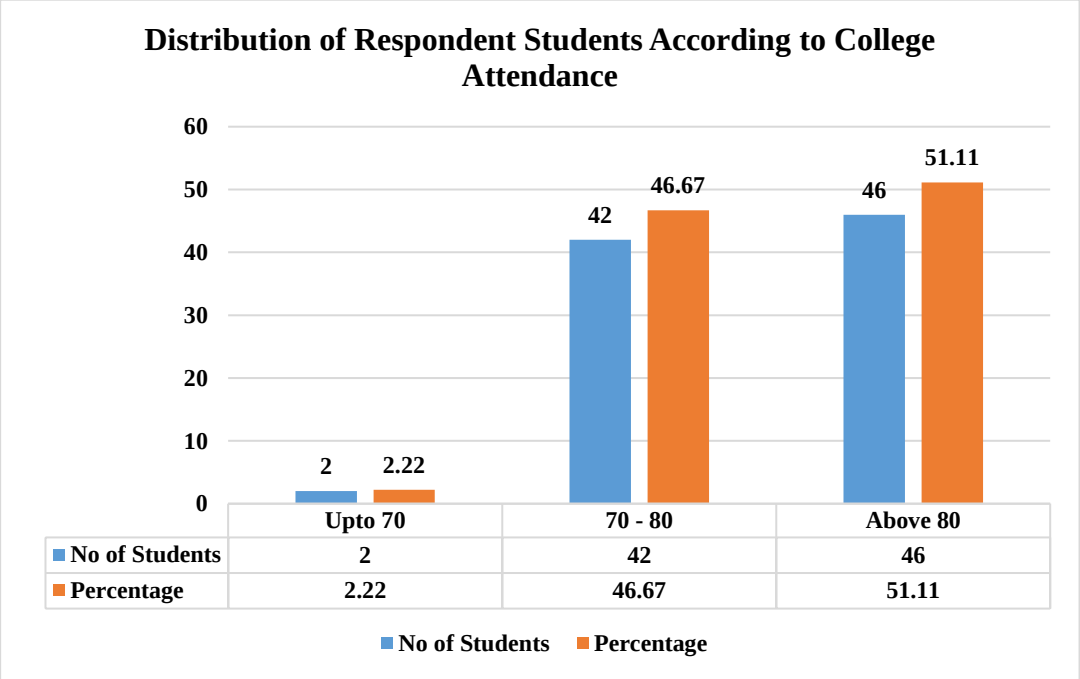


Figure 4.5: Distribution of Respondent Students According to College Attendance

Table 4.7 indicates that half of the respondent students had more than 80 % attendance in college whereas 46.67% of respondent students are in 70-80 percent categories. On average, attendance of respondent students worked out to 82.5 %. It shows that most of the students were regular in attending college.

4.4.6 Economic Status.

Economic status refers to a student's total family income in rupees per annum. It was categorized as follows and shown in Table 4.8.

Table 4.8: Distribution of Respondent Students According to Economic Status

Sr.No.	Category (Per Annum)	No of Students	Percentage
1	Upto 7 lakhs	13	14.44
2	7-9 lakhs	31	34.44
3	9 - 15 lakhs	35	38.89
4	Above 15 lakhs	11	12.22
	Total	**90**	**100.00**
	Mean	**13.82**	
	SD	**7.39**	
	CV	**53.45**	

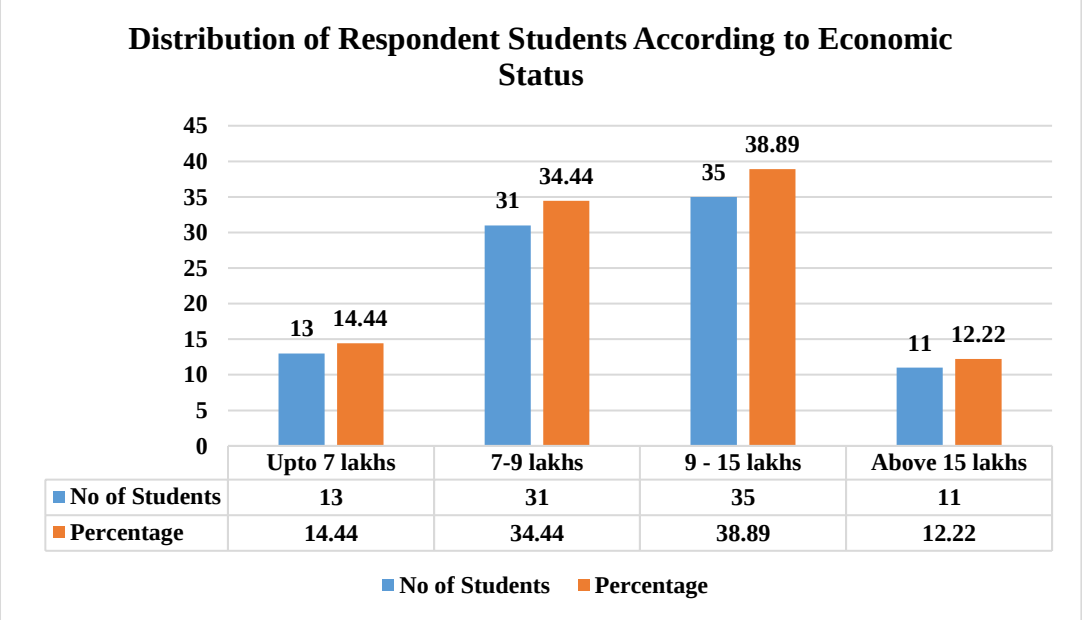


Figure 4.6: Distribution of Respondent Students According to Economic Status

Table 4.8 shows that a relatively higher proportion of the respondent students were from 9-15 lakhs per annum family income followed by 34-44 % in the family income group of 7-9 Lakhs per annum. The average annual family income of respondent students was 13.82 lakh per annum.

4.5 RELIABILITY, VALIDITY, NORMALITY AND NONPARAMETRIC TEST

Once the data from the experiment was obtained from students and teachers it was tested for its Reliability, Validity, Normality and then Nonparametric Test were used to examine the significance between two sets of observation.

4.5.1 Chronbach Alpha Method

To evaluate the reliability of the information gathered from the respondent students

by conducting experiments in classroom situations and transitional space situations, the Cronbach Alpha method was used as described in the methodology chapter. The coefficient was calculated separately for each of the nine factors. The coefficient ranges from 0.7 to 0.9 indicating reliability for the scale used. The result of reliability statistics for each informal learning indicator.

The analysis of Cronbach Alpha indicated that ranges from .7 to .9 indicating that the indicators selected for the study were reliable.

At the same time, the relevancy of data was further examined by collecting data from the same experiment in the same schedule by the selected teachers of architecture college. Once the data was collected from classrooms and transitional spaces by students and teachers, it was tested for their normality in behavior by working with statistical analysis. The results of descriptive statistical analysis are as follows.

For the present analysis, the independent variable is a type of space i.e., classroom or transitional space. The transitional spaces have been further classified in 5 ways viz. courtyard, amphitheater, student's plaza, common area, and corridor. Activities were conducted to check the difference in scores on the dependent variable i.e., informal learning. Independent learning has been further measured using 10 variables-

X1- Graphic Designing

X2- Architecture Vocabulary

X3-Cutting and Rendering

X4-Adaptability

X5- Intra-personal skills

X6- Decision Making

X7-Communication Skills

X8- Self Confidence

X9-Subject Knowledge

Y or X10- Composite Index of knowledge.

The descriptive statistics show that the data is not normally distributed, therefore non-parametric tests have been used in the present analysis.

The present analysis has been divided into four parts.

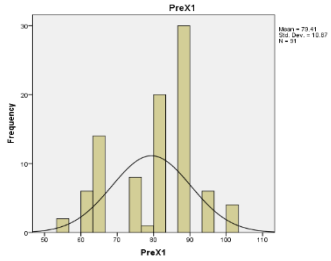
- To determine whether there is a significant difference in the scores from the pre-and post-tests of teachers and students, Mann-Whitney tests and Wilcoxon Rank tests have been conducted for each variable under study.

- The Wilcoxon test is used when we have related samples whereas Mann Whitney test is used when we have independent samples. Both are non-parametric alternatives for t-tests.
- The Kruskal-Wallis test has been used as a tool for analyzing the difference among post-test scores where the type of transitional space becomes the IV. As there were five types of transitional spaces, a non-parametric version of one-way ANOVA, i.e., the Kruskal-Wallis test was used.
- In the analysis scores of pre-tests mean the scores taken when the activity was conducted in the classroom and scores on post-test mean scores when activities were conducted in the transitional spaces.

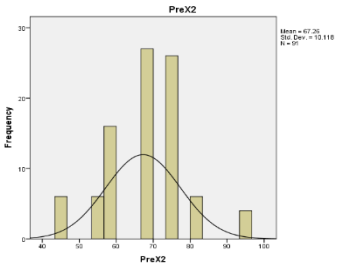
4.5.2 Pre-Test (classroom) Post-Test (transitional space) for students

Ref Histograms- Not normally distributed, check skewness and kurtosis section in descriptive in these figures.

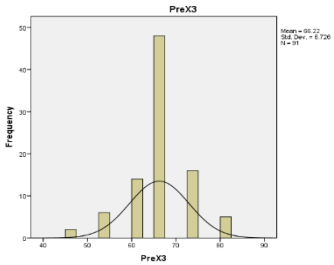
Learning Scores Activities Conducted in Transitional



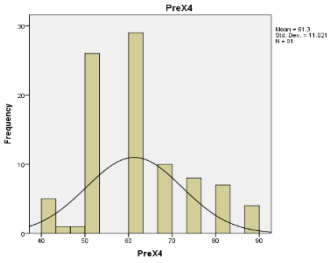
X1- Graphic Designing



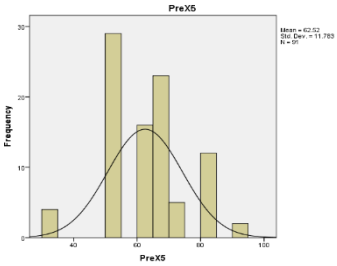
X2- Architecture Vocabulary



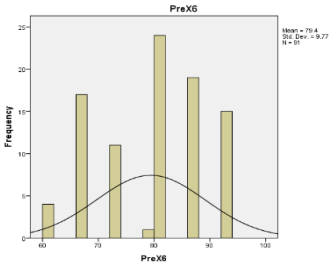
X3-Cutting and Rendering



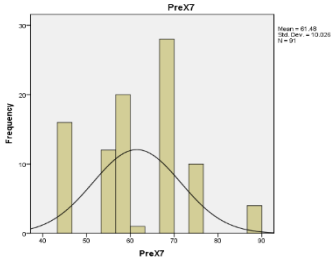
X4-Adaptability



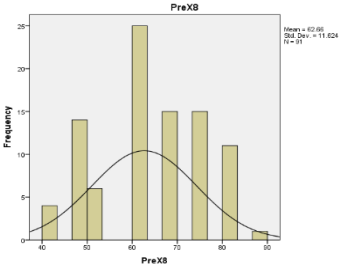
X5- Intra-personal skills



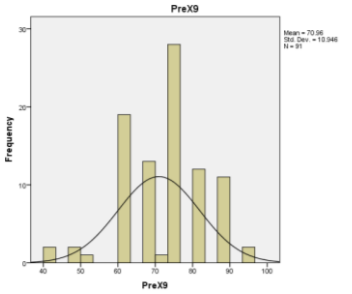
X6- Decision Making



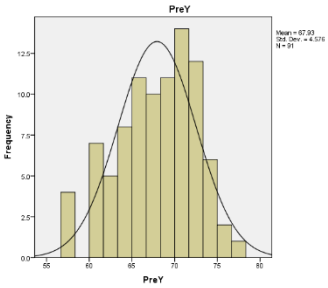
X7-Communication Skills



X8- Self Confidence



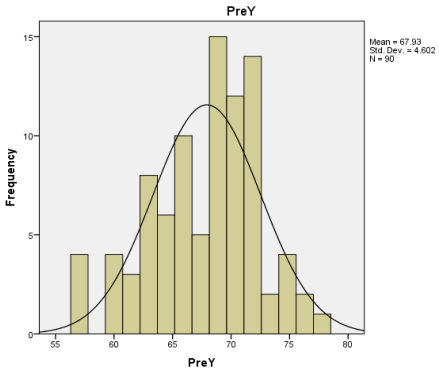
X9-Subject Knowledge



Y or X10 - Composite Index of Learning.

CLASS ROOM GROUP (PRE-Y)

TRANSITIONAL SPACE GROUP (POST-Y)



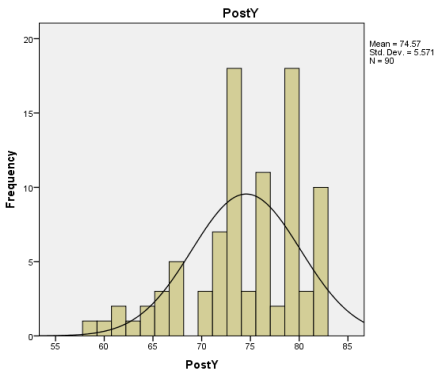


Figure 4.7: Learning Scores Activities Conducted in Transitional

A skewness value greater than 1 or less than -1 indicates a highly skewed distribution. A value between 0.5 and 1 or -0.5 and -1 is moderately skewed. A value between -0.5 and 0.5 indicates that the distribution is symmetrical (Oracle Enterprise Performance Management System Documentation, Release 11.1.2.4).

4.5.3 Descriptive Statistics

Table 4.9: Descriptive Statistics

	PreX 1	PastX 1	PreX 2	PostX 2	PreX 3	PastX 3	PreX 4	PostX 4	PreX S	PostX 5
N Valid	90	90	90	90	90	90	90	90	90	90
Missing	0	0	0	0	0	0	0	0	0	0
Mean	79_41	77_04	67.26	77.11	66_22	78_96	61.48	72_89	62_52	74_67
Std. Error of Mean	1152	1150	1072	1.264	713	1069	1.153	1.246	1.249	t362
Median	80.00	80.00	66.67	80.00	66.67	80.00	60.00	73.33	60.00	73.33
Made	87	73	678	80	67	80	60	60	53	73
Std. Deviation	10.931	10.907	10.174	11.995	6163	10.138	10.937	11.816	11.849	12.923
Variance	119.495	118.962	103.515	143.870	45.743	102.783	119.628	139.625	140.402	166.991
Skewness	-A17	-.321	.157	-.756	-.458	.210	.493	.326	.058	-.630
Std. Error of	_254	_254	254	.254	_254	_254	.254	.254	.254	254
Kurtosis	-A24	-.540	.700	.196	.918	-.267	.109	-.967	.621	207
Std. Error of Kurtosis	.503	.503	.503	.503	.503	.503	.503	.503	.503	.503
Minimum	53	53	47	47	47	60	40	47	33	33
Maximu	100	93	93	93	80	100	87	93	93	93
Sum	7147	6933	6053	6940	5960	7107	5533	6560	5627	6720

a. Multiple

	PreX 6	PostX 6	PreX 7	PostX 7	PreX 8	PostX 8	PreX 9	PostX 9	Pre Y	Post Y
	90	90	90	90	92	90	90	90	90	90
Missi	0	0	0	0	0	0	0	0	0	0
Mean	79.41	7200	61.48	72.74	62.67	7104	70.96	68.67	67.93	74.57
Std. Error of	1.036	1220	1.063	1.473	L232	t433	1.160	1.363	.485	_587
Median	80.00	73.33	60.00	73.33	60.00	80.00	73.33	66.67	68.89	74.81
Mode	80	73	67	73	60	87	73	67	70	79
Std. Deviation	9.825	11577	10.082	13.979	11689	13.597	11.007	12.932	4.602	5.571
Variance	96.524	134.03	101651	195.40	136.629	184.88	121.160	167.24	21.174	31.035
Skewness	-.231	.302	.290	-.209	-.137	-.448	-.391	-.379	-.451	-.816
Std. Error of	.254	254	.254	.254	.254	.254	.254	.254	.254	254
Kurtosis	-979	-321	-021	-.342	-823	-532	.303	-.521	-.180	_316
Std. Error of	.503	.503	.503	.503	.503	.503	.503	.503	.503	.503
Minimum	60	47	47	47	40	40	40	40	57	59
Maximum	93	93	87	100	87	100	93	93	77	83
Sum	7147	6480	5533	6547	5640	6933	6387	6180	6114	6711

Table 4.1: Test statistics

	PostX1 - Pre.X1	PostX2 - PreX2	PostX3 - PreX3	PostX4 - PreX4	PostX5 - PreX5
Z Asymp. Sig. (2-tailed)	-2.239[b] .025	-7.158[c] .000	-7.913[c] .000	-7.233[c] .000	-7.523[c] .000

a. Based
b. Based

	PostX6 - PreX6	PostX7 - PreX7	PostX8 - PreX8	PostX9 - PreX9	PostY- PreY
Z Asymp. Sig. (2-tailed)	-5.537[b] .000	-6.671[c] .000	-7.512[c] .000	-2.730[b] .006	-8.229[c] .000

Based on the scores of students, statistically significant change is seen ($p<.05$) in the change in median ranks of all 10 dependent variables. For graphic designing, there has been no change in the median but the mean has decreased from the pre-test to the post-test. For decision-making and subject knowledge, the means and median have both been reduced in the post-test data. All other factors including the composite index of knowledge show a statistically significant increase in the means and medians. This shows that for all these 6 factors and a composite index of knowledge, transitional spaces have facilitated informal learning. Graphic designing, decision making and subject knowledge yield better results in the classroom.

Table 4.11 Hypothesis Test Summary

1 Null Hypothesis	**Test**	**Sig.**	**Decision**
PreX1 and PostX1 differences have a median difference of 0	Wilcoxon Signed Rank Test Related Samples	.014	Reject the null hypothesis.

2 Null Hypothesis	**Test**	**Sig.**	**Decision**
PreX2 and PostX2 differences have a median difference of 0	Wilcoxon Signed Rank Test Related Samples	.000	Reject the null hypothesis.

3 Null Hypothesis	Test	Sig.	Decision
PreX3 and PostX3 differences have a median difference of 0	Wilcoxon Signed Rank Test Related Samples	000	Reject the null hypothesis.
4 Null Hypothesis	**Test**	**Sig.**	**Decision**
PreX4 and PostX4 differences have a median difference of 0	Wilcoxon Signed Rank Test Related Samples	.111	Reject the null hypothesis.
5 Null Hypothesis	**Test**	**Sig.**	**Decision**
PreX5 and PostX5 differences have a median difference of 0	Wilcoxon Signed Rank Test Related Samples	000	Reject the null hypothesis.
6 Null Hypothesis	**Test**	**Sig.**	**Decision**
PreX6 and PostX6 differences have a median difference of 0	Wilcoxon Signed Rank Test Related Samples	.000	Reject the null hypothesis.
7 Null Hypothesis	**Test**	**Sig.**	**Decision**
PreX7 and PostX7 differences have a median difference of 0	Wilcoxon Signed Rank Test Related Samples	.000	Reject the null hypothesis.
8 Null Hypothesis	**Test**	**Sig.**	**Decision**
PreX8 and PostX8 differences have a median difference of 0.	Wilcoxon Signed Rank Test Related Samples	.000	Reject the null hypothesis.
9 Null Hypothesis	**Test**	**Sig.**	**Decision**
PreX9 and PostX9 differences have a median difference of 0	Wilcoxon Signed Rank Test Related Samples	.024	Reject the null hypothesis.
10 Null Hypothesis	**Test**	**Sig.**	**Decision**
PreY and PostY differences have a median difference of 0	Wilcoxon Signed Rank Test Related Samples	.000	Reject the null hypothesis.

*****Asymptotic significances are displayed. The significance level is .05.

4.5.4 Pre-Test Post-Test for teachers

Table 4.12 : Descriptive Statistics

Statistics

	TPreX	TPostX	TPreX	TPostX	TPreX	TPostX	TPreX	TPostX	TPreX	TPostX
N Valid	90	90	90	90	90	90	90	90	90	90
Missin	0	0	0	0	0	0	0	0	0	0
Mean	78.91	75.22	68.29	75.84	65.38	78.09	64.73	69.96	66.36	71.42
Std. Error	1.046	1.151	1.041	1.232	.797	.990	1.167	1.080	1.360	1.380
Median	80.00	73.00	67.00	73.00	67.00	80.00	60.00	67.00	67.00	73.00
Mode	73	73	67a	67	67	80	60	60a	67	80
Std.	9.923	10.919	9.879	11.689	7.565	9.395	11.076	10.246	12.903	13.090
Variance	98.464	119.231	97.601	136.627	57.226	88.262	122.670	104.987	166.479	171.348
Skewness	.025	-.191	-.035	-.129	-.225	-.154	.290	.591	-.433	-.332
Std. Error	.254	.254	.254	.254	.254	.254	.254	.254	.254	.254
Kurtosis	-1.130	-.330	.888	-.151	-.138	-.342	-.735	-.405	.325	.431
Std. Error	.503	.503	.503	.503	.503	.503	.503	.503	.503	.503
Range	33	40	46	53	33	40	47	40	60	67
Minimum	60	53	47	47	47	60	40	53	33	33
Maximum	93	93	93	100	80	100	87	93	93	100
Sum	7102	6770	6146	6826	5884	7028	5826	6296	5972	6428

a. Multiple

	TPreX6	TPostX6	TPreX7	TPostX7	TPreX8	TPostX8	TPreX9	TPostX9	TPreY	TPostY
N Valid	90	90	90	90	90	90	90	90	90	90
Miss ing	0	0	0	0	0	0	0	0	0	0
Mean	73.07	68.89	62.78	72.76	66.98	69.57	79.73	67.11	69.59	72.09
Std. Error	1.212	1.064	1.053	1.160	1.096	1.223	1.054	1.086	.468	.469
Median	73.00	67.00	60.00	73.00	67.00	67.00	80.00	67.00	70.00	73.00
Mode	67	67	67	67	60	67	87	73	70	73
Std.	11.496	10.097	9.990	11.004	10.393	11.604	9.999	10.300	4.444	4.454
Variance	132.153	101.943	99.793	121.086	108.022	134.653	99.973	106.100	19.750	19.835
Skewness	-.084	.096	.333	.290	-.345	-.049	-.631	.092	-.300	-.315
Std. Error	.254	.254	.254	.254	.254	.254	.254	.254	.254	.254
Kurtosis	-.230	.236	.272	-.402	-.513	-.069	-.527	-.688	-.092	-.871
Std. Error	.503	.503	.503	.503	.503	.503	.503	.503	.503	.503
Range	46	46	40	46	47	53	33	40	19	16
Minimum	47	47	47	47	40	40	60	47	59	63
Maximum	93	93	87	93	87	93	93	87	78	79
Sum	6576	6200	5650	6548	6028	6261	7176	6040	6263	6488

Table 4.13 : Test Statistics

	TPostX1-TPreX1	TPostX2-TPreX2	TPostX3-TPreX3	TPostX4-TPreX4	TPostX5-TPreX5	TPostX6-TPreX6	TPostX7-TPreX7	TPostX8-TPreX8	TPostX9-TPreX9	TPostY-TPreY
Z	-2.806[b]	-6.510'	-7.352	-4.769'	-3.993'	-2.985[b]	-6.355'	-2.054'	-7.338'	-4.896'
Asymp. Sig. (2-tailed)	.005	.000	.000	.000	.000	.003	.000	.040	.000	.000

Based on the scores of teachers, there has been a statistically significant change ($p<.05$) in the median ranks of 10 dependent variables. For graphic designing, decision making and subject knowledge, the means and median have both been

reduced in the post-test data. This means that classrooms are better for all these 3 activities. All other factors including the composite index of knowledge show a statistically significant increase in the means and medians. This shows that for all these 6 factors and a composite index of knowledge, transitional spaces have facilitated informal learning.

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The median of differences between TPreX1 and TPostX1 equals 0.	Related-Samples Wilcoxon Signed Rank Test	.005	Reject the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The median of differences between TPreX2 and TPostX2 equals 0.	Related-Samples Wilcoxon Signed Rank Test	.000	Reject the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The median of differences between TPreX3 and TPostX3 equals 0.	Related-Samples Wilcoxon Signed Rank Test	.000	Reject the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The median of differences between TPreX4 and TPostX4 equals 0.	Related-Samples Wilcoxon Signed Rank Test	.000	Reject the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The median of differences between TPreX5 and TPostX5 equals 0.	Related-Samples Wilcoxon Signed Rank Test	.000	Reject the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The median of differences between TPreX6 and TPostX6 equals 0.	Related-Samples Wilcoxon Signed Rank Test	.003	Reject the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The median of differences between TPreX7 and TPostX7 equals 0.	Related-Samples Wilcoxon Signed Rank Test	.000	Reject the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The median of differences between TPreX8 and TPostX8 equals 0.	Related-Samples Wilcoxon Signed Rank Test	.040	Reject the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The median of differences between TPreX9 and TPostX9 equals 0.	Related-Samples Wilcoxon Signed Rank Test	.000	Reject the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The median of differences between TPreY and TPostY equals 0.	Related-Samples Wilcoxon Signed Rank Test	.000	Reject the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.

4.5.5 Difference between post-test (transitional space) scores based on type of transitional space

The transitional spaces have been further classified in 5 ways viz. courtyard, amphitheater, student's plaza, common area and corridor. Kruskal-Wallis tests were performed to see whether there was a significant change in scores based on the type of transitional space in which the activity was conducted.

Table 4.14 : Difference between rating scores for the 5 types of open spaces- teachers

Test Statistics [a, b]

	X1	**X2**	**X3**	**X4**	**X5**	**X6**	**X7**	**X8**	**X9**	**X10**
Chi-Square	1.870	.536	1.468	8.128	.636	7.396	1.624	8.299	4.601	9.470
df	4	4	4	4	4	4	4	4	4	4
Asymp. Sig	.760	.970	.832	.087	.959	.116	.805	.081	.331	.050

a. Kruskal Wallis Test
b. Grouping Variables GROUPS

Table 4.15 : Difference between rating scores for the 5 types of open spaces

Test Statistics [a, b]

	SX1	**SX2**	**SX3**	**SX4**	**SX5**	**SX6**	**SX7**	**SX8**	**SX9**	**SX10**
Chi-Square	4.923	1.173	1.776	1.036	.830	1.968	1.977	3.672	8.883	3.114
df	4	4	4	4	4	4	4	4	4	4
Asymp. Sig	.295	.882	.777	.904	.934	.742	.740	.452	.064	.539

a. Kruskal Wallis Test
b. Grouping Variables GROUPS

There is no statistically significant ($p<.05$) change in the rating scores of teachers and students for learning in the 5 types of transitional spaces. There has been a significant increase or decrease in scores from pre-test(classroom) to post-test (transitional space) but within the 5 transitional spaces that were studied, there has been no change. This implies that the type of transitional space does not make a difference but change from classroom to transitional spaces makes a significant difference. Correct utilization of any of the above-mentioned transition spaces will be beneficial in facilitating informal learning domains as opposed to the use of just classrooms.

Table 59 And 60 Hypotheses Testing for Kruskal Wallis to Test Whether There Is a Difference in Scores Based on Transitional Space for Teachers and Students Respectively

Table 4.16 : Hypothesis Test Summary

Sr. No.	Null Hypothesis	Test	Sig.	Decision
1	The distribution of X1 is the same across categories of GROUPS.	Independent Sample Kruskal-Wallis Test	.750	Retain the null hypothesis
2	The distribution of X2 is the same across categories of GROUPS.	Independent Sample Kruskal-Wallis Test	.970	Retain the null hypothesis
3	The distribution of X3 is the same across categories of GROUPS.	Independent Sample Kruskal-Wallis Test	.832	Retain the null hypothesis
4	The distribution of X4 is the same across categories of GROUPS.	Independent Sample Kruskal-Wallis Test	.087	Retain the null hypothesis
5	The distribution of X5 is the same across categories of GROUPS.	Independent Sample Kruskal-Wallis Test	.959	Retain the null hypothesis
6	The distribution of X6 is the same across categories of GROUPS.	Independent Sample Kruskal-Wallis Test	.116	Retain the null hypothesis
7	The distribution of X7 is the same across categories of GROUPS.	Independent Sample Kruskal-Wallis Test	.805	Retain the null hypothesis
8	The distribution of X8 is the same across categories of GROUPS.	Independent Sample Kruskal-Wallis Test	.081	Retain the null hypothesis
9	The distribution of X9 is the same across categories of GROUPS.	Independent Sample Kruskal-Wallis Test	.331	Retain the null hypothesis
10	The distribution of X10 is the same across categories of GROUPS.	Independent Sample Kruskal-Wallis Test	.050	Retain the null hypothesis

Asymptotic significance is displayed. The significance level is .05.

Table 4.17: Hypothesis Test Summary

Sr. No.	Null Hypothesis	Test	Sig.	Decision
1	The distribution of SX1 is the same across categories of GROUPS.	Independent Sample Kruskal-Wallis Test	.295	Retain the null hypothesis
2	The distribution of SX2 is the same across categories of GROUPS.	Independent Sample Kruskal-Wallis Test	.882	Retain the null hypothesis
3	The distribution of SX3 is the same across categories of GROUPS.	Independent Sample Kruskal-Wallis Test	.777	Retain the null hypothesis
4	The distribution of SX4 is the same across categories of GROUPS.	Independent Sample Kruskal-Wallis Test	.904	Retain the null hypothesis
5	The distribution of SX5 is the same across categories of GROUPS.	Independent Sample Kruskal-Wallis Test	.934	Retain the null hypothesis
6	The distribution of SX6 is the same across categories of GROUPS.	Independent Sample Kruskal-Wallis Test	.742	Retain the null hypothesis
7	The distribution of SX7 is the same across categories of GROUPS.	Independent Sample Kruskal-Wallis Test	.740	Retain the null hypothesis
8	The distribution of SX8 is the same across categories of GROUPS.	Independent Sample Kruskal-Wallis Test	.452	Retain the null hypothesis
9	The distribution of SX9 is the same across categories of GROUPS.	Independent Sample Kruskal-Wallis Test	.064	Retain the null hypothesis
10	The distribution of SX10 is the same across categories of GROUPS.	Independent Sample Kruskal-Wallis Test	.539	Retain the null hypothesis

Asymptotic significance is displayed. The significance level is .05.

4.5.6 Difference between student and teacher rating on informal learning

The difference between the rating scores of teachers and students for both pre-test and post-test were compared. This comparison shows the invalidity of the scale, as no difference in scoring indicates that the students and teachers have a uniform way of analyzing and marking the answers. The hypothesis testing is summarized in tables 4.18 .

Table 4.18 : Pre-test comparison between student and teacher rating

Hypothesis Test Summary

Sr. No.	Null Hypothesis	Test	Sig.	Decision
1	The distribution of Pre X1 is uniform across categories of Groups	Independent Samples Mann-Whitney U Test	.606	Retain the null hypothesis
2	The distribution of Pre X2 is uniform across categories of Groups	Independent Samples Mann-Whitney U Test	.402	Retain the null hypothesis
3	The distribution of Pre X3 is uniform across categories of Groups	Independent Samples Mann-Whitney U Test	.429	Retain the null hypothesis
4	The distribution of Pre X4 is uniform across categories of Groups	Independent Samples Mann-Whitney U Test	.041	Reject the null hypothesis.
5	The distribution of Pre X5 is uniform across categories of Groups	Independent Samples Mann-Whitney U Test	.019	Reject the null hypothesis.
6	The distribution of Pre X6 is uniform across categories of Groups	Independent Samples Mann-Whitney U Test	.000	Reject the null hypothesis.
7	The distribution of Pre X7 is uniform across categories of Groups	Independent Samples Mann-Whitney U Test	.390	Retain the null hypothesis
8	The distribution of Pre X8 is uniform across categories of Groups	Independent Samples Mann-Whitney U Test	.015	Reject the null hypothesis.
9	The distribution of Pre X9 is uniform across categories of Groups	Independent Samples Mann-Whitney U Test	.000	Reject the null hypothesis.
10	The distribution of Pre X10 is uniform across categories of Groups	Independent Samples Mann-Whitney U Test	.027	Reject the null hypothesis.

Asymptotic significance is displayed. The significance level is .05.

Group			Statistic	Std. Error
Pre X1	Students	Mean	79.41	
		Median	80.00	

		Variance	119.50	
		Std. deviation	10.93	
		Skewness	-0.42	0.254
		Kurtosis	-0.42	0.5029359
	Teachers	Mean	78.88	1.061
		Median	80.00	
		Variance	100.238	
		Std. deviation	10.012	
		Skewness	.047	.255
		Kurtosis	-1.076	.506
Pre X2	Students	Mean	67.23	1.072
		Median	66.67	
		Variance	103.515	
		Std. deviation	10.174	
		Skewness	.157	.254
		Kurtosis	.700	.503
	Teachers	Mean	68.01	1.028
		Median	66.67	
		Variance	94.121	
		Std. deviation	9.702	
		Skewness	-.135	.255
		Kurtosis	.880	.506
Pre X3	Students	Mean	66.22	.713
		Median	66.67	
		Variance	45.743	
		Std. deviation	6.763	
		Skewness	-.458	.254
		Kurtosis	.918	.503
	Teachers	Mean	65.32	.806
		Median	66.67	
		Variance	57.757	
		Std. deviation	7.600	
		Skewness	-.156	.255
		Kurtosis	-.154	.506
Pre X4	Students	Mean	61.48	1.153
		Median	60.00	
		Variance	119.628	
		Std. deviation	10.937	
		Skewness	.493	.254
		Kurtosis	.109	.503
	Teachers	Mean	64.87	1.171
		Median	60.00	
		Variance	121.984	
		Std. deviation	11.045	
		Skewness	.274	.255
		Kurtosis	-.770	.506
Pre X5	Students	Mean	62.52	1.249
		Median	60.00	

		Variance	104.402	
		Std. deviation	11.849	
		Skewness	.058	.254
		Kurtosis	.621	.503
	Teachers	Mean	66.14	1.344
		Median	66.67	
		Variance	106.833	
		Std. deviation	12.682	
		Skewness	-.412	.255
		Kurtosis	.387	.506
Pre X6	Students	Mean	79.41	1.036
		Median	80.00	
		Variance	96.524	
		Std. deviation	9.825	
		Skewness	-.231	.254
		Kurtosis	-.979	.503
	Teachers	Mean	72.81	1.211
		Median	73.33	
		Variance	130.530	
		Std. deviation	11.425	
		Skewness	-.097	.255
		Kurtosis	-.165	.506
Pre X7	Students	Mean	61.48	1.063
		Median	60.00	
		Variance	101.651	
		Std. deviation	10.082	
		Skewness	.290	.254
		Kurtosis	-.021	.503
	Teachers	Mean	62..77	1.059
		Median	60.00	
		Variance	99.807	
		Std. deviation	9.990	
		Skewness	.291	.255
		Kurtosis	.276	.506
Pre X8	Students	Mean	62.67	1.232
		Median	60.00	
		Variance	136.629	
		Std. deviation	11.689	
		Skewness	-.137	.254
		Kurtosis	-.823	.503
	Teachers	Mean	67.19	1.098
		Median	66.67	
		Variance	107.298	
		Std. deviation	10.358	
		Skewness	-376	.255
		Kurtosis	-.468	.506
Pre X9	Students	Mean	70.96	1.160
		Median	73.33	

		Variance	121.160	
		Std. deviation	11.007	
		Skewness	-391	.254
		Kurtosis	.303	.503
	Teachers	Mean	79.70	1.065
		Median	80.00	
		Variance	100.919	
		Std. deviation	10.046	
		Skewness	-.615	.255
		Kurtosis	-.507	.506
Pre X10	Students	Mean	67.93	.485
		Median	68.89	
		Variance	21.174	
		Std. deviation	4.602	
		Skewness	-.451	.254
		Kurtosis	-.180	.503
	Teachers	Mean	69.52	.466
		Median	69.63	
		Variance	19.323	
		Std. deviation	4.396	
		Skewness	-.359	.255
		Kurtosis	.102	.506

There is no significant (p>.05) difference between student and teacher rating scores for the pre-test on graphic designing, architecture vocabulary, cutting and rendering and communication. For adaptability, intrapersonal skills, self-confidence, subject knowledge, and a composite index of knowledge there is a significant difference between the rating scores of teachers and students.

Table 4.19: Pre-test comparison between teacher and student rating

	Pre X1	**Pre X2**	**Pre X3**	**Pre X4**	**Pre X5**	**Pre X6**	**Pre X7**	**Pre X8**	**Pre X9**	**Pre X10**
Mann-Whitney U	3873.000	3766.000	3789.000	33.55.500	3250.500	2746.500	3758.000	3218.000	2231.500	3278.000
Wilcoxon W	7968.000	7861.000	7884.000	7450.500	7245.500	6841.500	7853.000	7313.000	6326.500	7373.000
Z	-.515	-.837	-.791	-2.041	-2.346	-3.791	-.859	-2.426	-5.292	-2.213
Asymp. Sig. (2-tailed)	.606	.402	.429	.041	.019	.000	.390	.015	.000	.027

Table 4.20: Post-test comparison between student and teacher rating

Sr. No.	**Null Hypothesis**	**Test**	**Sig.**	**Decision**
1	The distribution of Post X1 is uniform across categories of Groups	Independent Samples Mann-Whitney U Test	.260	Retain the null hypothesis
2	The distribution of Post X2 is uniform across	Independent Samples Mann-	.192	Retain the null hypothesis

	categ ories of Groups	Whitney U Test		
3	The distribution of Post X3 is uniform across categories of Groups	Independent Samples Mann-Whitney U Test	.656	Retain the null hypothesis
4	The distribution of Post X4 is uniform across categories of Groups	Independent Samples Mann-Whitney U Test	.129	Retain the null hypothesis
5	The distribution of Post X5 is uniform across categories of Groups	Independent Samples Mann-Whitney U Test	.094	Retain the null hypothesis
6	The distribution of Post X6 is uniform across categories of Groups	Independent Samples Mann-Whitney U Test	.079	Retain the null hypothesis
7	The distribution of Post X7 is uniform across categories of Groups	Independent Samples Mann-Whitney U Test	.544	Retain the null hypothesis
8	The distribution of Post X8 is uniform across categories of Groups	Independent Samples Mann-Whitney U Test	.000	Reject the null hypothesis.
9	The distribution of Post X9 is uniform across categories of Groups	Independent Samples Mann-Whitney U Test	.222	Retain the null hypothesis
10	The distribution of Post X10 is uniform across categories of Groups	Independent Samples Mann-Whitney U Test	.000	Reject the null hypothesis.

Asymptotic significance is displayed. The significance level is .05.

Group			Statistic	Std. Error
Post X1	Students	Mean	77.04	1.150
		Median	80.00	
		Variance	118.962	
		Std. deviation	10.907	
		Skewness	-.321	.254
		Kurtosis	-.540	.503
	Teachers	Mean	75.21	1.162
		Median	73.33	
		Variance	120.191	
		Std. deviation	10.963	
		Skewness	-.150	.255
		Kurtosis	-.383	.506
Post X2	Students	Mean	77.11	1.264
		Median	80.00	
		Variance	143.870	
		Std. deviation	11.995	
		Skewness	-.756	.254
		Kurtosis	.196	.503
	Teachers	Mean	75.66	1.238
		Median	73.33	
		Variance	136.466	

		Std. deviation	11.682	
		Skewness	-.110	.254
		Kurtosis	-.119	.503
Post X3	Students	Mean	78.96	1.069
		Median	80.00	
		Variance	102.783	
		Std. deviation	10.138	
		Skewness	.210	.254
		Kurtosis	-.267	.503
	Teachers	Mean	78.05	.995
		Median	80.00	
		Variance	88.083	
		Std. deviation	9.385	
		Skewness	-.162	.255
		Kurtosis	-.285	.506
Post X4	Students	Mean	75.89	1.246
		Median	73.33	
		Variance	139.625	
		Std. deviation	11.816	
		Skewness	.326	.254
		Kurtosis	-.967	.503
	Teachers	Mean	69.89	1.092
		Median	66.67	
		Variance	106.174	
		Std. deviation	10.304	
		Skewness	.618	.255
		Kurtosis	-.427	.503
Post X5	Students	Mean	74.67	1.362
		Median	73.33	
		Variance	166.991	
		Std. deviation	12.923	
		Skewness	-.630	.254
		Kurtosis	.207	.503
	Teachers	Mean	71.39	1.394
		Median	73.33	
		Variance	172.932	
		Std. deviation	13.150	
		Skewness	-.309	.255
		Kurtosis	.353	.506
Post X6	Students	Mean	72.00	1.220
		Median	73.33	
		Variance	134.032	
		Std. deviation	11.577	
		Skewness	.302	.254
		Kurtosis	-.321	.503
	Teachers	Mean	68.76	1.079
		Median	66.67	
		Variance	103.632	

		Std. deviation	10.180	
		Skewness	.136	.255
		Kurtosis	.285	.506
Post X7	Students	Mean	72.74	1.473
		Median	73.33	
		Variance	195.400	
		Std. deviation	13.979	
		Skewness	-.209	.254
		Kurtosis	-.342	.503
	Teachers	Mean	72.73	1.185
		Median	73.33	
		Variance	124.889	
		Std. deviation	11.175	
		Skewness	.293	.255
		Kurtosis	-.420	.506
Post X8	Students	Mean	77.04	1.433
		Median	80.00	
		Variance	184.880	
		Std. deviation	13.597	
		Skewness	-.448	.254
		Kurtosis	-.532	.503
	Teachers	Mean	69.74	1.220
		Median	66.67	
		Variance	132.380	
		Std. deviation	11.506	
		Skewness	-.041	.255
		Kurtosis	-.011	.506
Post X9	Students	Mean	68.67	13.63
		Median	66.67	
		Variance	167.241	
		Std. deviation	12.932	
		Skewness	-.379	.254
		Kurtosis	-.521	.503
	Teachers	Mean	66.97	1.070
		Median	66.67	
		Variance	101.929	
		Std. deviation	10.096	
		Skewness	.063	.255
		Kurtosis	-.736	.506
Post X10	Students	Mean	74.57	.587
		Median	74.81	
		Variance	31.035	
		Std. deviation	5.571	
		Skewness	-.816	.254
		Kurtosis	.316	.503
	Teachers	Mean	72.04	.463
		Median	72.59	
		Variance	19.074s	

		Std. deviation	4.367	
		Skewness	-.336	.255
		Kurtosis	-.786	.506

In the post-test, the teachers and students have marked significantly different ratings ($p<.05$) for self-confidence and composite index of knowledge. For all other ratings, the difference was statistically non-significant. As self-confidence is a personal understanding of students, the scores for this domain are likely to vary between students and teachers.

	Post X1	**Post X2**	**Post X3**	**Post X4**	**Post X5**	**Post X6**	**Post X7**	**Post X8**	**Post X9**	**Post X10**
Mann-Whitney U	3663.000	3602.500	3898.000	3530.000	3472.500	3448.000	3841.000	2731.500	3629.500	2727.000
Wilcoxon W	7758.000	7697.500	7993.000	7625.000	7567.500	7543.000	7936.000	6826.500	7724.500	6732.000
Z	-1.127	-1.305	-.445	-1.518	-1.673	-1.673	-.606	-3.823	-1.220	-3.692
Asymp. Sig. (2-tailed)	.260	.192	.656	.129	.094	.079	.544	.000	.222	.000

4.5.7 Distribution of students based on level of informal learning.

After testing the normality and reliability of data, a composite index of informal learning of each respondent student was worked out under two situations: namely classroom and transitional spaces. The group of respondent students studied was common in both the situations and they were exposed through selected informal learning activities to the selected architecture subjects. The subject dealt with an Anthropometry assignment. The distribution of respondent students according to the informal learning level acquired was studied and presented in Table 4.21.

Table 4.21: Distribution of Respondent Students According to Informal Learning Level.

		Class Room Group		Transitional Space Group	
Sr.No.	Informal Learning Level (Percentage)	No of Students	Percentage	No of Students	Percentage
1	57 to 64	19	21.11	5	5.56
2	64 to 71	48	53.33	11	12.22
3	Above 71	23	25.56	74	82.22
	Total	90	100	90	100
Mean of Informal Learning Level -		67.90%		74.60%	
Difference in Informal Learning Level			**6.7%***		
Increase in Informal Learning Level in transitional spaces over Class room in Percentage - 9.86%*					

*The difference in informal learning was tested for its significance and found significant.

Table 4.21 shows that a large majority of the respondent students, i.e., 82.22% from the transitional space group gained the highest learning level i.e. above 71% while in the classroom only 25-55 % of respondent students gained above 71%. learning level. In the classroom however nearly half of the respondent students achieved 64 to 71% learning level.

Overall, a **9.86%** increase in learning level was observed in transitional spaces as against classroom situations. When tested for its significance with the help of non-parametric tests, it was found significant, indicating that the difference in informal learning level was sizable or cognizable.

4.6 EFFECT OF TRANSITIONAL SPACES AND ACTIVITIES CONDUCTED ON INFORMAL LEARNING.

4.6.1 Transitional Spaces and Level of Learning

The level of informal learning was studied according to different important transitional spaces namely, courtyard, amphitheatre, common area, student plaza, and corridors. The results obtained are presented in Table 4.22.

Table 4.22: Transitional Spaces and Level of Informal Learning

Sr.No.	Transitional Spaces	No. Of Students	Mean Level of Informal Learning
1	Courtyard	23	66.40
2	Amphitheatre	22	74.80
3	Common Area	22	75.00
4	Student's Plaza	11	75.20
5	Corridors	12	72.40
	Overall Total	90	74.60

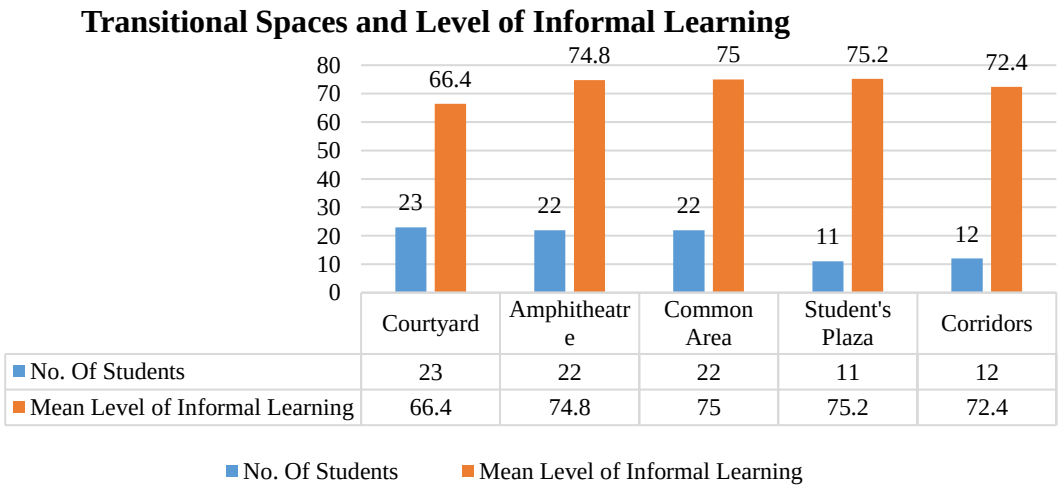


Figure 4.8: Transitional Spaces and Level of Informal Learning

It is observed from Table 4.22 that eleven respondent students subjected to Student Plaza have exhibited the highest level of informal learning i.e., 75.20 % followed by common area and Amphitheatre wherein 22 each respondent students have recorded 75 % and 74.80% informal learning respectively. On the other hand, corridors and courtyards were relatively less effective with 72.40% and 66.40 % learning respectively. On an average, 5 transitional spaces studied exhibited 74.60% level of informal learning. Thus, it may be concluded that the overall learning effect of the spaces included in the experimental design has exhibited a substantial effect on the informal learning of the respondent students regarding architecture subjects.

4.6.2 Learning activities performed and level of informal learning.

The effect of various learning activities on the level of informal learning was studied. The three most important learning activities, namely model making, workshop and student's presentations were studied and results obtained are presented in Table 4.23.

Table 4.23 : Informal Learning Activities Performed and Level of Informal Learning

Sr.No.	Informal Learning Activities	Mean Level of Informal Learning		
		Class Room	Transitional Spaces	Difference in Informal Learning Levels
1	Model Making	71.7	77.70	6.00
2	Workshop	66.9	73.20	6.30
3	Student's Presentation	64.8	72.80	8.00
	Overall Total	67.9	74.60	6.70*

*Increase in informal learning in transitional spaces over the classroom is 9.86%s

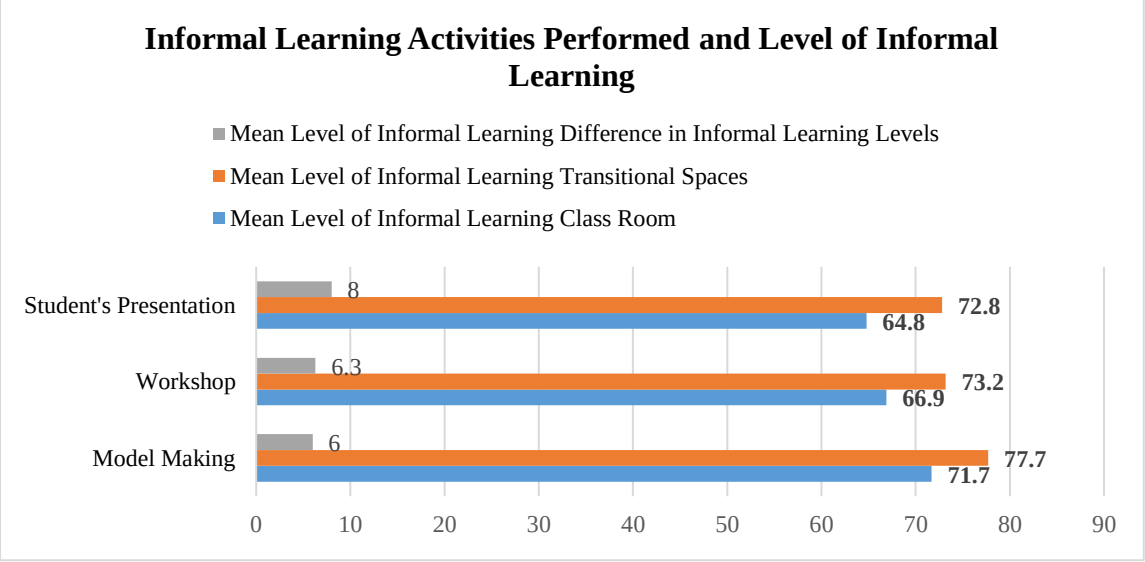


Figure 2.9 : Informal Learning Activities Performed and Level of Informal Learning

It could be seen from Table 4.23 that model-making activity has been found to be most effective learning activity in classroom situations as well as in transitional space situations. Further, it is observed that the student's presentation has shown a relatively low level of learning in transitional spaces as compared to workshop and model making. The effect on informal learning was observed more in transitional spaces as compared to classrooms. The overall difference between classroom and transitional situations in learning was found to be 6.0 % in model making followed by 6.3% in workshop activity. The highest difference in learning was observed in the student's presentation activity i.e. 8.0 %. The overall increase in learning in transitional spaces over classroom situations was to the extent of 9.86%. Thus, it may be concluded that taking into consideration all three activities, overall learning is relatively more in transitional spaces. It establishes the importance of transitional spaces in learning architectural subjects.

4.6.3 Effect of Various Activities Conducted in Transitional Spaces on Informal Learning of Students

The effect of various activities conducted in transitional spaces on informal learning was studied and the results obtained are shown in Table 4.24.

Table 4.24: Effect of Activities Conducted in Transitional Spaces on Informal Learning of Students

Sr.No.	Transitional Space	Characteristics of Transitional Spaces	Learning Activities	No. of Students	Mean Levels of Informal Learning (%)
1	Courtyard	Octagon,20%, Open to sky, Seating Arrangements for students, centrally located in college building, centrally located in college building, Hard,1:2, Open Space, Electrical Facility/ Wifi	Model Making Activity	23	80.3
2	Amphitheatre	Octagon, Open to sky, Seating Arrangements for students, Hard,1:2, Open Space. Electrical Facility/ Wi-Fi, Near to Canteen,5%	Students Presentation	22	73.2
3	Common Area	Notice Board, Seating Arrangements for students,20%,1:4, Octagon, centrally located in college building, Semi-Open Space, Paneling, Hard, Rectangle, Electrical Facility/ Wi-Fi, At Entrance of Building, Near to Class Room,1:5, Enclose Space, Level Difference	Workshop	22	73.2
4	Student's Plaza	Octagon,20%, Open to sky, Seating Arrangements for students, centrally located in college building, Hard,1:2, Rectangle, Open Space, Electrical Facility/ Wifi, Square	Model Making Activity	11	79.2
5	Corridors	1:4,20%, Seating Arrangements for students, Notice Board, centrally located in college building, Semi-Open Space, Hard, Paneling, Rectangle, Near to Amphitheatre, Electrical Facility/ Wi-Fi, At Entrance of Building, Near to Class Room, Near to Canteen,1:5, Level Difference, Enclose Space	Students Presentation	12	70.6

It is observed from Table 4.24 that model-making activities conducted in courtyard and student's plaza were found to be the most effective activity and exhibited the highest informal learning i.e. 80.3% and 79.2% respectively followed by the student's presentation activity in the Amphitheatre 73.2% and Corridors 72.6%. Further, it is observed that workshop activity presented in the common area has shown a relatively low level of informal learning 70.6%.

Thus, it may be said that overall learning is relatively more in a model-making activity conducted in the courtyard and student's plaza.

4.7 RELATIONAL ANALYSIS

4.7.1 Correlates of Informal Learning

The relationship between various characteristics of the respondent students with their learning level both in classroom situation and in selected transitional spaces was studied. The relationship with respondent student's characteristics were studied i.e. entry-level marks, residential status, NATA marks, college attendance, and economic status. The results obtained have been tabulated with the help of frequency distribution, percentage, and coefficient of correlation (r) discussed as follows.

4.7.1.1 Entry Level Marks.

The relationship between entry-level marks and learning levels of respondent students has been presented below.

Table 4.25: Relationship Between Entry level Marks with Informal Learning

		Class Room Percentage Score of Learning Level									**Transitional Space Percentage Score of Learning Levels**									
Sr.No.	**Percentage of Entry-Level Marks**	**57 - 64**		**64 - 71**		**Above 71**	**Total**		**Average Informal Learning Level**		**57 - 64**	**64 - 71**	**Above 71**	**Total**		**Average Informal Learning Level**		**Difference Between Class Room and Transitional Space Informal Learning**		
		No.	%	No.	%	No.	%	No.	%		No.	%	No.	%	No.	%	No.	%		
1	Upto 65	3	23.08	7	53.85	3	23.08	13	100	60.6	2	15.38	1	7.69	10	76.92	13	100	70.20	9.6
2	65-80	15	23.81	33	52.38	15	23.81	63	100	67.7	3	4.76	9	14.29	51	80.95	63	100	74.70	11.7
3	Above 80	1	7.14	6	42.86	7	50.00	14	100	70.5	0	0	1	7.14	13	92.86	14	100	77.00	6.5
							Overall		67.9							Overall		74.60	6.7	
		Correlation Coefficient ®= 0.25 **									**Correlation Coefficient ®= 0.23 ****			**** Significant at 5% level of significant**						

**** 5% level of significance**

Table 4.25 revealed that the respondent students with more than 80% marks at the entry-level attained the highest learning level in the classroom as well as in transitional spaces with 70.5 % and 77.0% respectively. It is also observed that most of the respondent students having a relatively higher percentage of marks obtained the highest learning level in transitional spaces i.e. 80.95 % and 92.86% respectively.

In both situations, respondent students with increasing levels of marks exhibited increased levels of learning. However, the learning was comparatively higher in transitional spaces than in classroom situations. The difference in learning level among the students with relatively test marks at entry level was relatively more i.e., 9.6%. The reason might be due to variations in the understanding and intelligence level of respondent students. The students with low understanding probably are more comfortable in learning activities in transitional spaces than in classroom situations (as could be observed from the mean level of learning in classroom & transitional spaces).

The relationship between entry-level marks with informal learning score with the help of correlation coefficient (r). The correlation coefficient for the classroom situation and transitional space situation was r = 0.25 and r = 0.23 respectively. When tested for its significance with a ‘t-test’, it was found significant at 5 % level of significance. Therefore, the results obtained explained the positive relationship between entry-level marks and informal learning.

4.7.1.2 Residential Status.

Residential status referred to their residence during college days among the selected respondent students. Some of them were full-time residing in college hostels and those who residing outside of the college hostel were referred to as day scholars. The relationship between the hosteller and dayscholars with learning levels has been presented in Table 69.

Table 4.26: Relationship Between Residential Status with Informal Learnings

		Class Room Percentage Score of Learning Level									Transitional Space Percentage Score of Learning Levels									
Sr.No.	**Residential Status**	**57 - 64**		**64 - 71**		**Above 71**		**Total**		**Average Informal Learning Level**	**57 - 64**		**64 - 71**		**Above 71**		**Total**		**Average Informal Learning Level**	**Difference between Class Room and Transitional Space**
		No.	%	No.	%	No.	%	No.	%		No.	%	No.	%	No.	%	No.	%		
1	Day scholar	4.00	11.11	18	50.00	14	38.89	36	100	69.4	0	0	3	8.33	33	91.67	36	100	76.5	7.1
2	Hosteller	15	27.78	30	55.56	9	16.67	54	100	66.9	5	9.26	8	14.81	41	75.93	54	100	73.3	6.4
								Overall		**67.9**							**Overall**		**74.60**	**6.7**
		Correlation Coefficient r = - 0.26 **									**Correlation Coefficient r = - 0.27 ****						**** Significant at 5% level of significant**			

**** 5% level of significance**

It is seen from Table 4.26 that residential status of the respondent students had a significant impact on their learning levels in both classrooms as well as transitional space situations. However, the dayscholar respondents have exhibited higher levels of learning in both classes as well as transitional space situations. It is further observed that the highest proportion of dayscholar respondents i.e., 91.67% have exhibited the highest level of learning (above 71%) in transitional spaces. The difference with respect to learning level in classrooms and transitional space has revealed 7.1% increase in transitional spaces over classroom groups in the case of dayscholar and 6.4% in the case of hostlers. The comparative study of average learning levels between the two groups exhibited that for both dayscholar and hosteller, learning was relatively more in transitional spaces.

The correlation between residential status and learning level was found to be negative and significant.

4.7.1.3 NATA marks and learning levels.

This is operationally defined as the marks of a student in NATA examination. The relationship between NATA marks obtained by respondent students and their learning level has been worked out and presented in Table 4.27.

Table 4.27 : Relationship Between Mark Obtained in NATA Examination with Informal Learning

		Class Room Percentage Score of Learning Level									Transitional Space Percentage Score of Learning Levels									Difference between Class Room and Transitional Space
Sr.No.	NATA Examination Marks	57 - 64		64 - 71		Above 71		Total		Average Informal Learning Level	57 - 64		64 - 71		Above 71		Total		Average Informal Learning Level	
		No.	%	No.	%	No.	%	No.	%		No.	%	No.	%	No.	%	No.	%		No.
1	70 - 90	1	25.00	3	75.00	0	0.00	4	100	67	0	0	1	25	3	75	4	100	72.2	5.2
2	90 - 120	11	25.00	26	59.09	7	15.91	44	100	66.9	3	6.82	6	13.64	35	79.55	44	100	74.1	7.2
3	120 to 150	6	14.63	19	46.34	16	39.02	41	100	69.2	2	4.88	4	9.76	35	85.37	41	100	75.3	6.1
4	Above 150	1	100.00	0	0.00	0	0.00	1	100	63.7	0	0	0	0	1	100	1	100	74.1	10.4
								Overall		**67.9**							**Overall**		**74.60**	**6.7**
		Correlation Coefficient r = 0.24 **									**Correlation Coefficient r = - 0.15 ****						**** Significant at 5% level of significant**			

Table 4.27 shows that nearly 50 % of the students had obtained 90-120 marks in the NATA examination followed by 45.50% of respondent students in the range of 120-150 marks. Thus, most of the respondent students are in the range of 90-150 marks i.e. 94.43%. The relationship between these two variables has revealed that a relatively higher proportion of the students i.e. 39.02% had more than 71 % learning level in classrooms. As against this in the transitional spaces, more than 71% of learning level was recorded in the case of a majority of the students i.e.85.37%.

In the classroom situation, relatively high proportions of the students from the 90-150 range of NATA marks obtained a lower learning level i.e., in the range of 67-71 %. When compared with the transitional space group, the majority of the respondent students from the same range of marks (85.37 and 79.55) in 120-150 marks group and 90-120 marks group. The highest average level of learning has been recorded among the respondents with 120-150 marks on NATA examination in both groups. i.e., 69.2 % and 75.9 % respectively. It shows that there was a definite increase in learning levels amongst the respondent students from the same NATA marks range in the transitional space group. It shows that with the increase in NATA marks, the level of learning increases in both the classrooms and transitional space situations. However, the transitional space group seems to be more effective for all types of NATA marks.

The correlation coefficient (r) between these two factors indicated a positive and significant relationship between these two factors that with the increase in mean levels of NATA marks there was an increase in learning level in both situations.

4.7.1.4 Relationship between College Attendance with Informal Learning Levels.

It is presumed that the students who are punctual in attending the classes learn more effectively as compared to other students. Hence the relationship between attendance and learning levels in different situations was studied and presented in Table 4.29.

Table 4.28: Relationship Between College Attendance with Informal Learning

		Class Room Percentage Score of Learning Level									**Transitional Space Percentage Score of Learning Levels**									**Difference between Class Room and Transitional Space**
Sr.No.		**57 - 64**		**64 - 71**		**Above 71**		**Total**		**Average Informal Learning Level**	**57 - 64**		**64 - 71**		**Above 71**		**Total**		**Average Informal Learning Level**	
		No.	%	No.	%	No.	%	No.	%		No.	%	No.	%	No.	%	No.	%		No.
1	Upto 70 %	0	0	2	100	0	0	2	100	68.5	0	0	0	0	2	100	2	100	73	4.5
2	71 to 80 %	13	30.95	24	57.14	5	11.90	42	100	66.6	3	7.14	7	16.67	32	76.19	42	100	73.5	6.9
3	81% and above	6	13.04	22	47.83	18	39.13	46	100	61	2	4.35	4	8.70	40	86.96	46	100	67.1	6.1
								Overall		**67.9**							**Overall**		**74.60**	**6.7**
		Correlation Coefficient r = 0.16 **									**Correlation Coefficient r = 0.20 ****						**** Significant at 5% level of significant**			

Table 4.28 indicates that there is a positive and significant relationship between attendance and level of learning in both groups. i.e. (r = 0.16 and r = 0.20). Relatively highest level of learning (above 71%) was observed among the respondent students with the highest attendance level, i.e., above 80 %. (Learning level 39.13% and 86.96% respectively). The learning level was substantially high in the transitional space group among the respondent students with more than 80 % attendance.

It is therefore concluded that with the increase in attendance, the learning level also increases and the increase is substantially high in transitional space groups.

4.7.1.5 Relationship between Economic status with informal learning Levels.

The relationship between economic status and learning level has been worked out and presented in Table 4.29.

Table 4.29: Relationship Between Economic Status with Informal Learning Level

		Class Room Percentage Score of Learning Level									**Transitional Space Percentage Score of Learning Levels**						**Total**			**Difference between Class Room and Transitional Space**
Sr. No.		**57 - 64**		**64 - 71**		**Above 71**		**Total**		**Average Informal Learning Level**	**57 - 64**		**64 - 71**		**Above 71**		**Total**		**Average Informal Learning Level**	
		No.	%	No.	%	No.	%				No.	%	No.	%	No.	%	No.	%		No.
1	Upto 7 lakhs	2	15.38	6	46.15	5	38.46	13	100	69.1	0	0	2	15.38	11	84.62	13	100	75.3	6.2
2	7-9 lakhs	5	16.13	18	58.06	8	25.81	31	100	68.5	0	0	3	9.677	28	90.32	31	100	75	6.5
3	9 - 15 lakhs	1	14.29	5	71.43	1	14.29	7	100	67.3	1	14.29	0	0	6	85.71	7	100	75.4	8.1
4	Above 15 lakhs	11	28.21	19	48.72	9	23.08	39	100	67.2	4	10.26	6	15.38	29	74.36	39	100	73.8	6.6
								Overall		**67.9**							**Overall**		**74.60**	**6.7**
		Correlation Coefficient r = - 0.09									**Correlation Coefficient r = - 0.05**									

Correlation coefficient r is found to be non-significant

It is observed from Table 4.29 that there was no significant relationship between the economic status of the respondent students and learning levels. However, their frequency distribution indicates that a relatively higher proportion of respondent students i.e. 38.46% had above 71% learning levels in a classroom situation. Secondly, the majority of the respondents (90.32%) from the 7 to 9 lakh annual income group had the highest learning level i.e., above 71%. There was no significant difference in learning levels amongst various economic status levels. The highest proportion of respondents, i.e. 90.32% from the 7-9 lakh income group had the highest level of learning in transitional space situations. Secondly, 71.43% of respondent students from 9-15 lakh income group had 64-71% learning level in classroom situations.

Therefore, it is concluded that the economic status of the respondent students did not play any substantial role in learning levels in both situations.

4.8 SUMMERY OF THE STUDY

The result of the study indicated that out of 20 transitional spaces identified,10 transitional spaces were ranked high compared to other transitional spaces. The coefficient of variation worked out to 18.75 thereby indicating consistency in the effectiveness of spaces in facilitating informal learning of architectural subjects.

Overall it was observed that the courtyard and student plaza are the most effective in promoting the informal learning of the students. As regards the characteristics of transitional spaces the shape, open-to-sky, seating arrangement for students and 1:4 length-to-width ratio were found to be the most important characteristics of transitional spaces.

A relatively larger number of activities were performed in common areas followed by the student plaza and courtyard. However, the effectiveness of activity performed in transitional space is relatively more important than the number of activities. When activities performed and student involvement are compared, it was relatively more in student presentation, model making, and workshop.

The informal learning levels of the individual were worked out using the composite index method. This was worked out for the classroom and transitional space situation. The results showed that the majority of students i.e. 82.22 percent from transitional spaces gained the highest learning level while in the classroom group 71 percent. Only

25.55 percent gained above 71 percent learning level. In general,9.86 percent increase in learning level was observed in transitional spaces over classroom situations.
The level of informal learning in different transitional spaces used in the study shows that the highest level was observed 75.20 percent in the student plaza followed by the common area 75 percent and the amphitheatre 74.8 percent. Overall, informal learning levels in transitional spaces were observed to be 74.6 percent. Thus, it may be said that the overall learning effect of transitional spaces has exhibited a substantial effect on the informal learning of students.

The informal learning activities selected for study were model making, workshops and student presentations. The analysis of the study reveals that model-making activity is the most effective in both the situations i.e. Classroom and transitional spaces. In general, the effect of informal learning in transitional spaces was more than in classroom situation.

The overall difference in learning in the classroom and transitional space situation was 6.7 percent. However, in terms of percentage, the increase in informal learning level was 9.86 percent more in transitional space over classroom situation. Thus, it established the importance of transitional spaces in learning architecture subject.

CHAPTER -5: SUMMARY AND CONCLUSIONS

Education is typically described as “a systematic process of acquiring knowledge through guidance or other relevant competencies." Simply stated, "Education is the road to development."

The first records of education come from around 1525. The modern school system was brought to India in the year 1830 where teaching was confined to classrooms as well as the close relationship between the teacher and the student.

Architectural education represents one of the most ancient educational disciplines, tracing its origins to the medieval period of the 5th century, and gradually gained recognition as an official form of education by the global community in the early 19th century. In India, architectural education has a history spanning over a century. Education is typically categorized into formal, non-formal, and informal types. Formal education transpires within educational institutions and is generally organized according to curricular objectives, under the guidance of instructors. Conversely, informal education occurs when individuals are not enrolled in a school and do not adhere to a specific methodology, meaning that learning takes place outside the confines of a structured curriculum.

In recent years, the idea of studying has evolved from traditional methods to innovative approaches. The future of education will embrace open-space learning (Transitional spaces) rather than confined learning environments (Classrooms). These transitional spaces play a crucial role in every architectural blueprint. Recently, architects have contended that incorporating the design of transitional spaces can foster a learning atmosphere that enhances the educational journey.

Nassar et al., (2014) expressed in their study the importance of transitional spaces in higher education as a part of students gathering areas to improve their interaction behavior and also improve their informal learning in college transitional spaces. Studying in campus transitional spaces students feel free to explore learning. These transitional spaces are mostly used for conducting various informal learning activities in colleges.

In architectural education where formal education is effective, informal activities are a complement role to formal events. At the same time informal education areas are also very important for the students to follow the professional agenda.

Informal activities are generally designed to allow students to become more involved in campus to develop leadership social responsibility, citizenship, volunteerism, and employment experience. These informal activities are mostly conducted in transitional spaces to increase the informal learning of the students.

Informal learning is characterized as educational experiences that occur beyond the confines of a formalized and structured environment; it is sometimes referred to as experiential learning.

Students need campus transitional spaces for social interactions such as debate, discussion, group working and presentation. All these informal activities help to develop informal learning of the students.

To investigate the extent to which transitional spaces influence informal learning through various informal learning activities, this study was conducted with the following objectives.

5.1 RESEARCH OBJECTIVES.

1. To Identify the parameters of Transitional Spaces and their characteristics.
2. To assess the Informal activities performed in Transitional Spaces.
3. To determine the effect of Informal activities performed on Informal learning of Students.

5.2 METHODOLOGY

In the present study, one of the objectives was to identify the parameters of transitional spaces and their characteristics in architecture colleges, In all 20 transitional spaces which were identified. The identified transitional spaces were referred to two groups of judges, viz, one who was architects & other who were college teachers for judging relevance and rating their importance. Rating was subjected to three points continuums namely most relevant, relevant & not relevant with 3,2 and 1 scores. After obtaining ratings from judges, mean score, S.D. and C.V. for each transitional space was calculated and transitional spaces with more than 30 C.V. were deleted. Finally, 10 transitional spaces were selected and ranked based on mean score. There were

courtyard, amphitheatre, student plaza, corridors, canteen area and passages. As far as characteristics of transitional spaces are concerned, total 37 characteristics of transitional spaces were identified and referred to judges for rating and relevance. After

obtaining a rating from judges' mean score, S.D. and C.V. for each characteristic was worked out. The characteristics for which the C.V. was found to be more than 30 were deleted, and finally, 27 characteristics of transitional spaces were selected.

As far as the identification of informal learning activities is concerned, in all 15 informal learning activities were identified. They were standardized by referring to judges consisting of 23 teaching faculty from different architecture colleges on 3-point continuum namely, most important, important and not important with 3, 2 and 1 score After obtaining relevance and rating from judges, mean score S.D and C.V. for each activity was worked out and informal activities with more than 30 CV were deleted. Finally, 10 activities were selected. Out of these, three (3) activities with highest ranking were selected for an experiment.

To study the effect of informal learning activities on the informal learning of architectural students, informal learning indicators were prepared. A total of 29 indicators were identified and they were referred to judges who have above 10 years of professional experience in the field of architecture with teaching. They were advised to decide relevance and rating on 3 points of a continuum, mainly most relevant, relevant, and not relevant with 3, 2 and 1 scores. Thereafter mean score, S.D. and C.V. were worked out after receiving a rating from judges again informal learning with more than 30 C.V. was deleted from the study. Thus finally 16 indicators were selected.

Considering the time for research and conducting experiments using informal learning activities, nine most important informal learning indicators were studied.

The selected indicators were studied for their reliability and validity using Test-retest Internal consistency reliability and split-half reliability.

- **Locale of Study**

The study was conducted in pune by selecting six leading architecture colleges under pune university. The year of study was 2021-22. Out of the six selected colleges, two colleges were selected based on a relatively higher level of availability of transitional spaces. The selection of two colleges was done keeping in view the time availability for research and the scope of the study. From selected colleges, in all 90 students i.e. 45 students from each college, were selected using nth sample random method. The variables related to student's profiles which are most likely to influence informal learning were marks at entry level, residential status, NATA marks at entry

level, residential status, college attendance and Economic status of finally selected for study.

The study was conducted using an experimental research design. The design consisted of conducting experiments on the selected subject activities related to the course work of the students. The students were exposed in the classrooms to formal learning situation and the same group of students were exposed in transitional spaces to the same activities for the informal learning experience. The difference between the informal learning of two situations measures the increase/decrease in informal learning. The effect of informal learning activities on the informal learning of the student was studied by conducting experiment. For this, two sets of academic programs namely formal classroom teaching and informal transitional space learning spaces were executed. The subject of anthropometry was experimented. The experiment was conducted about three hours, i.e. one and a half hours in a classroom and one and a half hours in transitional spaces. The response of the students was sought on 5 points continuums i.e. fully increased, increased, partially increased, not increased and not at all increased with 5,4,3,2 and 1 scores. Thereafter a composite index of informal learning of each student was worked out using scores obtained from students on each item of learning indictors. The raw score obtained was multiplied by weight given by experts, thus in this way weighted score was worked out and it was used to compute the weighted composite index of informal learning. The formula used to compute the weighted composite index was as below.

Weighted composite index = weighted obtained score/ weighted obtainable score x 100

The weighted informal learning index indicates the knowledge gained by each respondent student.

The results obtained in the present investigation are based on empirical evidence and various aspects of transitional spaces in architecture colleges. They have been presented under the following heads.

1. Identification and Rating of: -

(a) Transitional spaces.

(b) Characteristics of transitional spaces.

(c) Informal learning activity

(d) Informal learning indicators

2. Distribution Analysis
3. Relational Analysis.

- **Identification of transitional spaces and their Rating.**

The result of the study indicated that out of 20 transitional spaces identified, ten spaces namely the courtyard, amphitheatre common area, verandas, student plaza, corridors, ramp, entrance steps, canteen area and passages were ranked high. The ranking indicated that the courtyard amphitheatre and common area were ranked highest compared to others. The coefficient of variation is observed to be 18.75 percent indicating consistency in the effectiveness of these spaces in facilitating informal learning about architecture subjects.

5.3 IDENTIFICATION OF CHARACTERISTICS OF TRANSITIONAL SPACES AND THEIR RATING.

The investigation indicated that each transitional space has different characteristics as indicated below.

5.3.1 Courtyard

The courtyard space was observed to be octagonal with 20 percent area of the total space and open to sky, centrally located in a college building with a hard surface 1: 2 ratio of length to breath with all infrastructures facilities.

5.3.2 Amphitheatre

The characteristics preferred were octagon-sized, open to sky, hard surface with seating arrangement, near to canteen, 1: 2 proportion, electrical facility with Wi-Fi. out of these characteristics, the octagon in size, open to sky, seating arrangement for students and hard surface ranked highest.

5.3.3 Common area

The common area is another important transitional space. Its characteristics are octagonal in size, centrally located in colleges, semi-open space, near to classrooms and equipped with electrical facilities and Wifi.

5.3.4 Verandas

The ideal characteristics of verandas were centrally located in a college building with seating arrangement for students and 20 percent area of the total space, semi-open with hard surface and in proportion 1: 4 and rectangle in shape.

5.3.5 Student Plaza

The Characteristics of student plaza are octagon size, open to sky, seating arrangement, 20% area hard surface. The length & breadth should be in the range of 1: 2 with electrical and Wi-Fi facilities

5.3.6 Corridors

The corridor was centrally located in the college building, having an availability of Notice Board, seating arrangement for students. Area may be 20% of the total space with 1: 4 length & breadth dimensions. The other characteristics were semi-open space hard surface, near to classrooms and Canteen

5.3.7 Ramp

Architecturally, an entrance is an opening, such as a door or gate, that allows access to a place such as a building or room. The important characteristics were semi-open, open to the sky. hard surface and semi-open spaces.

5.3.8 Entrance steps

Architecturally, an entrance is an opening, such as a door or gate, that allows access to a place such as a building or room. The important characteristics were semi-open, open to the sky. hard surface and semi-open spaces.

5.3.9 Canteen Area

The characteristics were semi-open, open to sky, centrally located in the college building and semi-open space.

5.3.10 Passage

The characteristics were 1: 4 length & breadth dimensions followed by 20% area of the total space, seating arrangement for students and availability of notice board.

On the whole, it is observed that courtyard and student plaza are most effective in promoting the informal learning of the students. As regards characteristics of transitional spaces, the shape, open-to-sky, seating arrangement for students and 1:4

length-to-width ratio are the most important characteristics of transitional spaces.

Identifications of Informal Learning Activities

With regards to the activities performed, out of 10 important activities identified, student's presentation, model making and workshops were found to be the most important activities and play a more effective role in providing informal learning.

5.4 DISTRIBUTION ANALYSIS

5.4.1 Student profile

In distributional analysis, five important characteristics of 90 respondent students have been studied such as entry level marks, residential status, NATA marks at entry level, college attendance and economic status.

5.4.2 Entry level marks

This is operationally defined as the percentage of marks at 12th Standard admissible for entry-level in Architecture College. The analysis shows that a relatively higher number of sample students i.e. 61.11% had 65 to 80 percent marks at entry level followed by 24.44 % with above 80 %. marks. The average level of percentage of marks at the entry-level was 72.12 percent.

5.4.3 Residential status

Students who are full-time residents in college hostels are referred to as hostellers and those residing outside of the college hostel are called Day scholars. The results of the study show that a relatively higher proportion of selected students i.e. 60 % were hostellers while the remaining 40% were Day scholars.

5.4.4 NATA marks at entry level

This has been defined as the marks of a student at NATA examination which is compulsory for admission in Architecture Colleges. The result of the analysis shows that nearly 48.89 percent of students were in the range of 90 to 120 marks while a slightly lower proportion i.e. 45.56 percent were in the range of 120-150 marks. Only 1.11 percent of students were in the range of above 150 marks. The mean level marks obtained by selected students in the NATA examination were 117.421 i.e. 118 marks.

5.4.5 College Attendance

College attendance refers to the percentage of attendance of an individual student in

attending different lectures. The analysis's findings indicate that 50 percent of the students had more than 80 percent attendance while 46.67 percent of the students were in the 70-80 percent category. On average, college attendance of respondent students worked out to 82.5 percent, indicating the majority of the students were regularly attending college.

5.4.6 Economic status

Economic status is referred to as a student's total family income per annum. It shows that relatively higher proportions of students were in the category of 9-15 lakhs income per annum followed by 34.44 percent in the group of 7-9 lakhs per annum. The average annual family income of the selected students was 13.82 lakhs per annum.

5.5 DISTRIBUTION OF STUDENTS BASED ON INFORMAL LEARNING LEVEL.

The informal learning level of individual students was worked out using a composite index method in two situations namely classroom and transitional spaces.

The group of respondent students was common in both situations and were exposed through selected informal learning activities to the selected architecture subject. The subject dealt with an anthropometry assignment. Thereafter the respondent students were distributed according to the informal learning level acquired. It is observed that a large majority of the students, i.e. 82.22 percent from the transitional space group gained the highest learning level, i.e., above 71 percent while in the classroom group, only 25.55 percent gained above 71 percent learning level. In the classroom group, however, nearly 53.33 percent of students achieved 64 to 71 percent learning level, while an overall 9.86 percent increase in learning level was observed in transitional spaces as against classroom situations. When tested for its significance with the help of non-parametric test, it was found significant indicating the difference in informal learning is sizable or cognizable level.

5.5.1 Effect of transitional spaces and activities conducted on informal learning.

5.5.1.1 Transitional spaces and level of informal learning.

The level of informal learning in different transitional spaces, namely courtyard, amphitheatre, common area, and student's plaza and corridors shows that student's plaza

has exhibited the highest level i.e. 75.20 percent followed by 75 percent and 74.80 percent respectively in a common area and amphitheater. On the other hand, corridors and courtyards were relatively less effective with 72.40 percent and 66.40 percent respectively. On an average, five transitional areas together exhibited 74.60 percent level of informal learning. Thus, it may be said that the overall learning effect of the transitional spaces included in the experimental design has resulted in a substantial effect on informal learning of the students.

5.5.1.2 Learning activities performed and level of informal learning

The various learning activities studied in the experiment were model making, workshops and student presentation. The results of the analysis show that model-making activity has been found to be most effective in both the situations i.e. classroom and transitional spaces. While the student's presentation has exhibited a relatively low level of learning in transitional spaces as compared to workshop and model making, in general, the effect on informal learning was more in transitional spaces as compared to classroom situations in all three informal learning activities.

The overall difference in learning between classrooms and transitional spaces was 6.7 percent. However, in terms of percentage, the increase in informal learning in transitional spaces over classroom situations was 9.86 percent. Thus, it establishes the importance of transitional spaces in learning architecture.

5.6 RELATIONAL ANALYSIS.

The Correlates of Informal Learning: -

The Relationship between various characteristics of a student's profile with their learning level both in classroom situations and in selected transitional spaces with respect to entry-level marks, residential status, NATA marks, college attendance and Economic status was studied. The results obtained are presented under the following heads.

5.6.1 Entry-level marks and informal learning levels

The analysis's findings indicate that the respondent students with more than 80 percent marks obtained the highest learning level in the classroom as well as transitional spaces to the extent of 70.5 percent and 77.0 percent respectively. Further, it is observed that students with a relatively higher percentage of marks obtained the highest learning level

in transitional spaces situations as compared to classroom situations. The correlation between entry-level marks with informal learning levels in the classroom, as well as transitional spaces, shows positive relationships.

5.6.2 Residential status and informal learning levels.

Residential status refers to their residence in a college hostel (Hosteller) or outside the College (Day scholars). The residential status had a significant impact on learning levels in the classroom as well as transitional spaces. The day-scholar students have exhibited higher levels of learning in transitional spaces situations i.e. 91.67 percent of students attained above 71 percent learning level, while 38.87 percent Day-scholar obtained above 71 percent learning level in classroom situations. The correlation between Residential Status and learning level was found to be negative and significant.

5.6.3 NATA marks and learning level.

The relationship between NATA marks obtained by students with their learning level shows that a relatively higher proportion of students i.e. 39.02 percent had more than 71 percent learning level in the classroom as against 85.37 percent in transitional spaces. The study indicated that with the increase in NATA marks, the level of learning also increased in the classroom as well as transitional spaces. However, the level increased in informal learning was more in transitional spaces as compared to class. The correlation between the two factors indicated a positive and significant relationship in both Situations.

5.6.4 College attendance with informal learning

The students who are punctual in attending classes learn more effectively compared to other students. The relationship between college attendance and learning level in different situations shows that there is an optimistic and significant relationship between attendance and level of learning in both the groups i.e. ($r = 0.16$) and ($r = 0.20$). The analysis's findings indicate that with the increase in attendance, the learning levels also increase and the increase is substantially high in the transitional space group.

5.6.5 Economic status with informal learning level.

The study explains that there was no significant relationship between economic status

and informal learning which indicates that the economic status of the respondent student did not play any substantial role in learning level in both the situations.

5.7 CONCLUSIONS

Based on important observations of the present research, the following conclusions have been drawn which would be useful to architects, researchers, and teachers. and policymakers.

1. Out of Twenty transitional spaces primarily identified, ten spaces namely courtyard, amphitheatre common area, veranda's, student plaza, corridors, ramp, entrance steps, canteen area and passages were found to be ranked relatively high.
2. With regards to the characteristics of transitional spaces, location, size, type of spaces, percentages of transitional spaces (to total built-up area), materials, infrastructure, enclosed spaces have been found to be the most preferred characteristics of transitional spaces.
3. Out of ten important activities identified, student involvement was relatively more in students' presentations, model making and workshops. These activities played a relatively higher effective role in providing informal learning in architecture education.
4. Student profiles such as entry level marks, residential status, NATA marks, college attendance and economic status were studied to investigate the relationship of these variables with the level of informal learning of students. The results show that there was a positive and significant relationship between these variables except for economic status of the respondent students.
5. The distribution of respondent students according to informal learning level shows that the majority of the students i.e. 82.22 percent gained the highest learning level i.e., above 71 percent, while only 25.55 percent of students in classroom situations gained above 71 percent informal learning.
6. The effect of transitional spaces on informal learning shows that the highest level of learning i.e. 75.20 percent was observed in student plaza followed by the common area (75.0 percent) and amphitheatre (74.80 percent). Thus, it may

be concluded that the overall learning effect of these transitional spaces included in the study has exhibited substantial effects on informal learning.

7. The effect of learning activities performed and the level of informal learning explained that model making has been found to be the most effective learning activity in both situations i.e., classroom and transitional spaces. The effect of workshop activity and student presentation activity has shown relatively low levels of informal learning.
8. The effect of various activities conducted in transitional spaces on informal learning was studied by computing the composite Index of informal learning for each activity. The results of the study concluded that model making activities conducted in courtyard and student's plaza were found to be the most effective activity and exhibited the highest informal learning level i.e. 80.3 percent and 79.2 percent respectively.
9. Overall, **9.86 percent** increase in learning level due to informal learning activities conducted in transitional spaces as against classroom situations was observed. The increase was found to be positive and significant using Mann Whitney test (nonparametric test).

5.8 IMPLICATIONS

1. Based on observations, it is implied that for interaction between students, students & faculties, for students gathering, brainstorming activities, these spaces should be preferentially considered while designing architecture College building.
2. Among various locations, the centrally located transitional space was most preferred. In terms of geometric configuration, the octagonal form emerged as the most preferred. Amongst the type of spaces, semi-open space was relatively preferred. Pertaining to the texture of the flooring, a hard surface was recommended. Concerning the functionality of spaces, the semi-open area has been evaluated as more advantageous for facilitating informal learning activities. With respect to infrastructure, the provision of adequate seating arrangements for students has been appraised as highly beneficial.
3. Informal learning activities like Student presentation, model making & workshop have been rated relatively more effective in facilitating informal learning in

architectural students. Hence, it implied that while using transitional spaces for informal learning, preference may be given student presentation, model making & workshop because students get more hands-on experiences and they get more opportunity to involved in learning experiences. While formulating the undergraduate academic lesson plan emphasis may be given by concerned teachers for incorporate these activities.

4. The observations regarding college attendance indicated a positive and significant relationship with the performance of students learning which means students with relatively high attendance showed higher informal learning. Therefore, it is implied that college authorities in general and teachers ensure that the attendance norms are strictly adhered to.
5. The study implied that while planning the informal activities, effort should be made to concentrate preferably on students plazza, common area and amphitheatre so that maximum informal learning effect can be achieved by students.
6. Apparently, model making activity facilitates relatively more personal involvement on psychological and psychomotor levels which subsequently helps in better knowledge gain and compression and understating of the architectural subjects. Thus, it implies that the teachers concerned and policy makers may appropriately include model making activity in curriculum.
7. Subsequently model making was relatively more effective for informal learning in the courtyard and student's plaza. It implies that while planning the activities in colleges i.e., model making in particular use of courtyard and student plaza be given preference by the teachers.
8. Consequently, the study suggests that looking at the substantial impact on informal learning through activities in transitional spaces. The architectural colleges/institutions should emphasise on providing the selective transitional spaces for informal activities in instructional premises. Where ever transitional spaces already available should be emphasized for students informal learning activities.

5.9 RECOMMENDATIONS

5.9.1 Recommendations For Space Planning of Transitional Spaces

1 Informal spaces should be prioritized when designing architectural college buildings, based on empirical research findings.

2 As far as recommendations of characteristics of transitional spaces are concerned

- Transitional spaces located centrally in college buildings were found to be most preferred due to increases visibility, making them more inviting for spontaneous learning activities and participation. These spaces naturally become hubs for student interaction, fostering discussions, peer learning, and collaboration.
- Regards to shape, most of the experts were in favor of the polygons like octagon shape of transitional space. Most experts favored due to octagonal form promotes better circulation, allowing for seamless movement while maintaining a sense of enclosure. It also enhances visual connectivity, Additionally, the shape provides flexible spatial arrangements,
- Regarding length & breadth of transitional spaces, 1:2 ratio is preferred by judges because this ratio ensures a well-proportioned space that is neither too narrow nor too expansive, maintaining spatial harmony. The ratio creates a sense of openness while still providing enclosure, making the space more inviting and conducive to learning.
- Among the types of spaces, semi-open space was found to be relatively the most ideal. Semi-open spaces provide a sense of shelter while maintaining connectivity with the surrounding environment, making them comfortable for extended use. Semi-open areas offer some protection from sun and rain, ensuring usability throughout the year.
- While surface of flooring, hard flooring was recommended because hard flooring materials, such as stone, concrete, or tiles, are long-lasting and can withstand high foot traffic without significant wear and tear. Hard flooring enhances the visual appeal of transitional spaces while clearly defining functional areas for student engagement.
- Semi-open space has been rated to be more useful for conducting informal learning activities. These spaces provide natural ventilation and lighting, creating a comfortable learning environment. These spaces maintain a connection with both indoor and outdoor areas, helping students feel engaged with their surroundings while promoting a sense of community.
- As far as the infrastructure is concerned, adequate seating arrangements with all other amenities have been rated highly useful. Proper seating ensures that

students can comfortably engage in discussions, model-making, and collaborative work for extended periods. Amenities such as shade, charging points, and adequate lighting make the space more functional and appealing for students.

3 It suggests that in the context of utilizing transitional spaces for informal learning, priority should be given to student presentations, model-making, and workshops, as these activities afford learners greater experiential engagement and enhance their involvement in the educational process.

4 Architecture colleges should design transitional spaces to be conducive to collaboration. This means incorporating flexible seating arrangements, larger communal tables, informal seating zones, and spaces that encourage students to engage in group discussions, project collaborations.

5 In general, while designing new architecture colleges and institutions emphasize should be given on providing the selective transitional spaces like courtyard, Amphitheatre, Common area, Student Plaza etc. and for existing colleges wherever transitional spaces are available they should be used for students informal learning activities.

5.9.2 Recommendations for planning of curriculum in education

1 It is suggested that while planning the informal learning activities effort should be made to concentrate these activities preferably in student plaza, common area and amphitheatre so that maximum learning effect can be achieved.

2 There was positive and significant relationship between variables of learning activities and informal learning. Therefore, it is recommended that such type activities will increase student's attendance and involvement in college.

3 It is recommended that while developing undergraduate curricula, during formulation of lesson plans, teachers should consider these experiential learning activities in their subjects so students will get greater experiential engagement and enhance their involvement in the educational process.

4 The study recommended that model making was relatively more effective for informal learning in courtyard and student's plaza. Hence while planning the

educational activities i.e. model making in courtyard and students plaza be given preference by the teachers.

5 Architecture students need quiet and peaceful spaces to process information, focus on creative tasks, and reflect on their designs. Providing these areas within the campus helps create a balanced environment for both individual and collaborative learning.

6 It is recommended that teacher should prepare a curriculum framework which will provides teachers with structured guidelines to design interactive, student-centered learning experiences beyond traditional classrooms. It ensures that educators can effectively utilize transitional spaces by incorporating experiential, hands-on, and peer-learning activities. This approach fosters a more engaging and dynamic educational environment, encouraging students to explore architectural concepts through real-world spatial interactions rather than passive learning.

7 A well-designed curriculum framework with structured activities helps in selecting the right spatial configurations and furniture layouts to maximize student engagement.

8 The study recommended by adopting alternative teaching methods self-directed learning and exploration, faculty can enhance student engagement, improve knowledge retention, and align architectural education with contemporary professional and academic trends.

9 Proposed Curriculum Framework for Transitional Spaces in Architecture Education.

Year	Objective	Subject & Activities	Weekly Time Allotment
Year 1 Foundational Year	Spatial Awareness & Observation	**Design & Basic Design Studio:** Outdoor sketching, material texture studies, shadow & light mapping.	4 hours (2 session X 2 hrs)
		Architectural Graphics: Live perspective drawing, documenting movement in transitional spaces.	3 hours (2 session x 1 ½ hrs)
		History of Architecture: Live documentation on corridor, courtyards & semi-open spaces, outdoor lectures, storytelling through space.	3 hours (Alternate Weeks)

Years 2 & 3 Intermediate Years	Applied Learning & Design Exploration	**Environmental Design:** Climate-responsive analysis of courtyards, green roofs, shaded walkways.	4 hours (2 session x 2 hrs)
		Building Construction & Materials: On-site prototyping, hands-on fabrication in open spaces.	4 hours (2 session x 2 hrs)
		Urban Studies & Site Planning: Mapping human movement, analyzing public spaces, community-led design.	3 hours (Alternate weeks)
		Outdoor Studios: Conduct design juries and reviews in courtyards, terraces, and semi-open spaces	4 hours (12session x 2 hrs)
Years 4 & 5 Advanced Years	Real-World Engagement & Research	**Advanced Studio Projects:** Adaptive reuse of transitional spaces, designing outdoor learning hubs.	6 hours (2 sessions x 3 hrs)
		Thesis Research & Workshops: Topics on place making, informal learning, outdoor educational design.	4 hours (1 session x 4 hrs)
		Live Projects: Collaborate with local communities to create interactive outdoor learning spaces. (Construction Yard)	Variable (Project-Based)

5.10 SCOPE OF FUTURE WORK

The scope of future work in the context of transitional spaces as informal learning environments for architecture students can be outlined as follows:

- **Further Research on Transitional Spaces**: Future studies could expand on the characteristics and parameters of transitional spaces identified in the current research. This includes a deeper exploration of how these spaces can be designed to enhance informal learning experiences for students.
- **Longitudinal Studies**: Conducting longitudinal studies to assess the long-term impact of transitional spaces on student learning and interaction behaviours would provide valuable insights. This could help in understanding how these spaces evolve over time and their sustained effectiveness in promoting informal learning.
- **Comparative Studies**: Future work could involve comparative studies between different educational institutions to analyse how varying designs of transitional spaces affect student engagement and learning outcomes. This could include a broader range of colleges beyond architecture schools to generalize findings across disciplines.

- **Integration of Technology**: Investigating the integration of technology within transitional spaces could be another area of focus. This includes exploring how digital tools and resources can enhance the learning experience in these informal settings, making them more interactive and engaging for students.
- **User-Centric Design Approaches**: Future research could adopt user-centric design approaches, involving students in the design process of transitional spaces. This participatory method could lead to spaces that better meet the needs and preferences of students, ultimately fostering a more conducive learning environment.
- **Policy Recommendations**: The findings from future studies could inform policy recommendations for educational institutions regarding the design and utilization of transitional spaces. This could help in creating guidelines that promote effective informal learning environments in colleges.
- **Assessment of Informal Activities**: Further assessment of the informal activities performed in transitional spaces can provide insights into how these activities contribute to the overall educational experience. Understanding the types of interactions and learning that occur in these spaces can guide future architectural designs.

By addressing these areas, future work can significantly contribute to the understanding and enhancement of transitional spaces as vital components of the educational landscape.

5.10.1 National Benefits from the Research

- **Enhanced Educational Strategies**: The research provides insights into how transitional spaces can be utilized to improve informal learning among architecture students. This can inform educational strategies and policies, leading to more effective learning environments in educational institutions across the nation.
- **Improved Learning Outcomes**: By demonstrating that students achieve higher learning levels in transitional spaces compared to traditional classrooms, the study suggests a potential shift in how educational spaces are designed and utilized. This could lead to improved learning outcomes on a national scale.

- **Policy Development**: The conclusions drawn from the research can aid policymakers in developing guidelines and standards for educational infrastructure that prioritize informal learning opportunities, thereby enhancing the overall quality of education.
- **Architectural Innovation**: The findings can inspire architects and designers to innovate in the creation of educational spaces, ensuring they are conducive to both formal and informal learning. This can lead to a new wave of architectural designs that better serve educational purposes.
- **Empirical Evidence for Educational Reform**: The study provides empirical evidence that can be used to advocate for educational reforms that incorporate more flexible and dynamic learning environments, potentially influencing national educational policies and practices.
- **Support for Teachers and Researchers**: The research offers valuable insights for teachers and researchers, helping them understand the impact of learning environments on student performance and engagement. This can lead to more effective teaching methods and research initiatives.

Overall, the nation stands to gain from this research by adopting more effective educational practices, improving student learning outcomes, and fostering innovation in educational infrastructure.

5.10.2 Professional Gains from the Research

- **Architectural Design Insights**: The research highlights the importance of transitional spaces in enhancing informal learning, providing architects with valuable insights into designing educational spaces that foster better learning environments. This can lead to innovative architectural practices that prioritize student engagement and learning outcomes.
- **Educational Planning and Development**: Professionals involved in educational planning can use the findings to develop more effective learning environments. By understanding the impact of different spaces on learning, they can create educational settings that maximize student potential and engagement.
- **Evidence-Based Practice**: The study offers empirical evidence that can be used by educators and architects to support the integration of informal learning

spaces in educational institutions. This evidence-based approach can enhance the credibility and effectiveness of their professional practices.

- **Enhanced Teaching Methods**: Educators can benefit from understanding how different environments impact learning. This knowledge can inform teaching methods and strategies, allowing educators to adapt their approaches to better suit the needs of students in various learning spaces.
- **Professional Development**: The research can serve as a resource for professional development, offering insights into the latest trends and findings in educational space design and informal learning. This can help professionals stay updated and improve their skills and knowledge in the field.
- **Collaboration Opportunities**: The findings can encourage collaboration between architects, educators, and policymakers to create more effective educational environments. This interdisciplinary approach can lead to more comprehensive solutions and innovations in the field.

Overall, the profession gains from this research by acquiring new knowledge and insights that can enhance the design and implementation of educational spaces, ultimately leading to improved learning experiences and outcomes.

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APPENDICES

Appendix 01:

Pilot Study Questionnaire About Transitional Spaces and Their Use by Students of Architecture College for Informal Learning.

PERSONAL INFORMATION:		
Email Address:	Name:	Contact Number:
Year:		
1) In your opinion, which of the following informal spaces (Transitional Space) are frequently used by students on college campus?		
•Courtyard	•Passage	•Student Plaza
•All above	•None of above	
2) Do you think these types of transitional spaces are useful for students to perform informal activities in college?		
•Yes	•No	
3) Which types of activity are carried out in these transitional spaces by students?		
•Group Discussion	•Presentation/Jury	• Meeting
•Display of work	• All above	
4) How much time spent by students in this informal spaces (Transitional spaces) in college timings.		
•1 - 1.5 hours	• 1.5 - 2 Hours	• 2 - 2.5 Hours
•Above 2.5 Hours		
5) Which is the suitable time students mostly like to spend in these informal spaces (Transitional spaces)?		
•09.00 to 10.00 AM	• 10.00 to 12.00 PM	• 12.00 to 02.00 PM
•02.00 to 05.00 PM		
6) Are these spaces are used by faculty for different informal activities.		

•Yes	• No	
7) If yes, what types of activities are conducted by Faculty?		
•Informal Lectures	• Group Discussion	• Workshop
•Jury / presentations		
8) Which types of activities are conducted by college in these transitional spaces?		
•Cultural Programmes	• Workshop	• Address to students
•All above		
9) In your opinion, which type of Shape is suitable for use of informal activities in college transitional space?		
•Square	• Rectangle	• Triangle
•Circle	• Octagon	
10) Which type of Transitional spaces is preferred for use of informal activities in college?		
•Open Space	• Semi Open Space	• Partly Open Space
•Enclose Space		
11) Would you prefer to have canteen in or near transitional space		
•Yes	• No	
12) Which types of existing infrastructural facilities are available in transitional spaces in your College?		
•Seating Arrangements	• Paneling	• Notice Board
•Electrical Facility/ Wifi	• All Above	
13) Do you think, activities carried out in these spaces helps to improve informal knowledge of students?		
•Yes	• No	
14) If yes, which type of informal knowledge/Skills improved by students?		
•	• Presentation Skills	• Group Discussion

Communication Skills		
• Understanding Skills	• Personality Development	
15) Do you think this type of activity should be carried out regularly in college?		
• Yes	• No	
16) In your opinion, which type of activity and infrastructure facilities need to be planned in Informal spaces.		
17) Any Other Suggestions		

Appendix 02:

Questionnaire for Standardization of Transitional Space Test for Identifying Characteristic of Transitional Space in Architecture Colleges

1. Location of Transitional Spaces:				
Question: Which one is important as per your opinion among the given locations?				
Sr.No.	**Location**	**Most Relevant**	**Relevant**	**Not Relevant**
1	Near to Class Room			
2	Centrally located in college building			
3	At Entrance of Building			
4	Near to Amphitheatre			
5	Near to Canteen			
2. **Shape of Transitional Spaces:**				
Question: Which are important shapes for conducting various activity in college transitional space.				
Sr.No.	**Shape**	**Most Relevant**	**Relevant**	**Not Relevant**
1	Square			
2	Rectangle			
3	Triangle			
4	Octagon			
5	Pentagon			
6	Ovel			
3. **Size of Transitional Spaces:**				
Question: Which size of transitional space is important in college for conducting college activities?				
Sr.No.	**Size**	**Most Relevant**	**Relevant**	**Not Relevant**
1	01:02			
2	01:03			
3	01:04			
4	01:05			
4. Area Accupied Of Transitional Spaces:				
Question: What should be the area under transitional spaces for conduction activities in college.				
Sr.No.	**Size**	**Most Relevant**	**Relevant**	**Not Relevant**
1	5%			
2	10%			
3	20%			
4	30%			

5. Ambiance of Transitional Spaces:

Question: Which type of appearance (Ambiance) should be usually preferred in transitional spaces.

Sr.No.	Size	Most Relevant	Relevant	Not Relevant
1	Open to sky			
2	Semi open			
3	Covered			
4	Semi covered			
5	Partly covered and partly open			

6. Material of Transitional Spaces:

Question: What type of material generally preferred in transitional spaces?

Sr.No.	Size	Mostly Relevant	Relevant	Not Relevant
1	Hard			
2	Soft			
3	Mix			
4	Wooden Flooring			
5	Level Difference			

7. Use of Informal Activities In College:

Question: Which type of Transitional spaces are preferred for use of informal activities in college ?

Sr.No.	Size	Mostly Relevant	Relevant	Not Relevant
1	Open Space			
2	Semi Open Space			
3	Partly Open Space			
4	Enclose Space			

8. Material Of Transitional Spaces:

Question: Which type of infrastructural facilities should be design in transitional spaces in College ?

Sr.No.	Size	Mostly Relevant	Relevant	Not Relevant
1	Seating Arrangements for students			
2	Panelling			
3	Notice Board			
4	Electrical Facility/ Wifi			

Appendix 03:

Questionnaire for collection of information on activities conducted in transitional spaces

Sr.No.	Activities	Mostly Relevant	Relevant	Not Relevant
1	Brain storming			
2	Reading			
3	Group Discussion with Friends			
4	Discussion with Teaches			
5	Question & Answer			
6	Teacher & Student Interaction			
7	Experiential learning			
8	Academic Activity			
9	Sharing of Practical Knowledge			
10	Presentation			
11	Student Meeting			
12	Workshop			
13	Jury / presentations			
14	Cultural Programmes			
15	Address to students			
16	Model Making Activity			

Appendix 04:

Questionnaire For Collection of Information On Knowledge Indicators For Measuring Gain In Knowledge By Architecture Students.

SUBJECT 01: ARCHITECTURAL DESIGN				
Sr.No.	**Subject**	**Mostly Relevant**	**Relevant**	**Not Relevant**
1	Visual & graphic skills			
2	Creative & imagination skills			
3	Architectural design vocabulary			
4	Freehand drawing & Sketching			
5	Rendering skills in different medium			
6	Media of presentation.			
7	Conceptualization			
8	Basic creative instinct			
9	Theoretical knowledge.			
10	Organization of spaces			
11	Architectural spaces			
SUBJECT 02: BUILDING CONSTRUCTION AND MATERIALS				
Sr.No.	**Subject**	**Mostly Relevant**	**Relevant**	**Not Relevant**
1	Building elements			
2	Construction principles			
3	Structural stability			
4	Compatible building materials			
5	Basic principles of construction			
6	Methods of construction			
7	Awareness about new materials			
8	Diversified solutions related to materials			
9	Applying finishes, decorations and aesthetic			
SUBJECT 03: THEORY OF STRUCTURES				
Sr.No.	**Subject**	**Mostly Relevant**	**Relevant**	**Not Relevant**
1	Structural Supports & support reactions			
2	Simple support			

3	Hinge support			
4	Roller support			
5	Larger space spanning both in R.C.C and Steel			
6	Lateral pressure and structural principles for overcoming it.			
7	Foundation to Roof.			
8	Types of Loads			
9	Types of Forces			
10	Understanding structural design in RCC			
SUBJECT 04: LANDSCAPE ARCHITECTURE				
Sr.No.	**Subject**	**Mostly Relevant**	**Relevant**	**Not Relevant**
1	Elements and principles			
2	Effective Site planning			
3	Location of structures on site.			
4	Orientation			
5	Role of landscape elements in design			
6	Outdoor environments on the site			
7	Intent of designed landscapes			
8	Integrated design of open and built spaces.			
9	Environmental concerns in Architecture.			
SUBJECT 05: BUILDING SERVICES				
Sr.No.	**Subject**	**Mostly Relevant**	**Relevant**	**Not Relevant**
1	Services in building.			
2	Water services			
3	Sanitation			
4	Electrical services			
5	Storm water drainage			
6	Rain water Harvesting			
7	Importance of water & collection of Rainwater			

8	Electrical services at domestic level Design			
9	Natural and mechanical ventilation,			
10	Knowledge of pipes, fittings & water supply systems.			
SUBJECT 06: ELECTIVE				
Sr.No.	**Subject**	**Mostly Relevant**	**Relevant**	**Not Relevant**
1	Contemporary trends			
2	Approaches in architectural production in terms of design			
3	Practices			
4	Perception			
5	Appreciation			
6	Critical discourses			
7	To reflect architecture across the world.			
SUBJECT 07: WORKING DRAWING				
Sr.No.	**Subject**	**Mostly Relevant**	**Relevant**	**Not Relevant**
1	Graphical presentation components of a building			
2	Working drawings and their importance.			
3	Important of tender documents.			
4	Dimensioning and Annotations			
5	Tabulation of schedules of materials,			
6	Making Electrical layout			
7	Water supply system of the entire project.			
8	Designing & constructing of compound wall			
9	Submission Drawing			
10	Design of chambers, pits, sumps.			

Appendix 05:

Reliability Test for Knowledge Indicators.

LIST OF KNOWLEDGE INDICATORS						
SUBJECT 01: ARCHITECTURAL DESIGN						
Sr.No.	**Subject**	**Fully Acquired**	**Acquired**	**Partially Acquired**	**Not Acquired**	**Can Not Say**
1	Visual & graphic skills					
2	Creative & imagination skills					
3	Architectural design vocabulary					
4	Freehand drawing & Sketching					
5	Rendering skills in different medium					
6	Conceptualization					
7	Basic creative instinct					
8	Theoretical knowledge.					
9	Organization of spaces					
10	Architectural spaces					
SUBJECT 02: BUILDING CONSTRUCTION AND MATERIALS						
Sr.No.	**Subject**	**Fully Acquired**	**Acquired**	**Partially Acquired**	**Not Acquired**	**Can Not Say**
1	Building elements					
2	Construction principles					
3	Basic principles of construction					
4	Methods of construction					
5	Awareness about new materials					
SUBJECT 03: THEORY OF STRUCTURES						
Sr.No.	**Subject**	**Fully Acquired**	**Acquired**	**Partially Acquired**	**Not Acquired**	**Can Not Say**
1	Foundation to Roof.					
2	Types of Forces					
3	Understanding structural					

	design in RCC					
SUBJECT 04: LANDSCAPE ARCHITECTURE						
Sr.No.	**Subject**	**Fully Acquired**	**Acquired**	**Partially Acquired**	**Not Acquired**	**Can Not Say**
1	Elements and principles					
2	Effective Site planning					
3	Location of structures on site.					
4	Orientation					
5	Role of landscape elements in design					
6	Outdoor environments on the site					
7	Integrated design of open and built spaces.					
SUBJECT 05: BUILDING SERVICES						
Sr.No.	**Subject**	**Fully Acquired**	**Acquired**	**Partially Acquired**	**Not Acquired**	**Can Not Say**
1	Services in building.					
2	Importance of water& collection of Rain water					
3	Electrical services at domestic level Design					
4	Natural and mechanical ventilation,					
SUBJECT 06: ELECTIVE						
Sr.No.	**Subject**	**Fully Acquired**	**Acquired**	**Partially Acquired**	**Not Acquired**	**Can Not Say**
1	Contemporary trends					
2	To reflect architecture across the world.					
SUBJECT 07: WORKING DRAWING						
Sr.No.	**Subject**	**Fully Acquired**	**Acquired**	**Partially Acquired**	**Not Acquired**	**Can Not Say**
1	Graphical presentation components of a building					

2	Working drawings and their importance.					
3	Dimensioning and Annotations					
4	Water supply system of the entire project.					

Appendix -06

List of Publication, Conference and Patent

Sr. No.	Title of paper with author names	Name of Journals/ Conferences	Published date	ISSN no/vol no, issue no	Indexing In Scopus/Web Of Science /UGC-CARE List
1	Evaluating Transitional Spaces In Architectural Colleges: A Study Using Garrett's Ranking Technique Author: Ar. Abhijit S. Marawar Dr. Raminder Kaur	International Journal of Cultural Studies and Social Sciences	2024	ISSN 2347-4777 Volume-20 Issue-2 Pages-18	UGC-CARE
2	The effective use of transitional spaces as an informal learning in architecture colleges	Journal of Asian Architecture and Building Engineering	Accepted Submitted 11/12/23 Decisioned 22/01/25	ID – JAABE2312805AP	Scopus Taylor & Francis
3	The Future Of Learning: Innovations In Education Author: Ar. Abhijit S. Marawar Ar Dhananjay Chaudhari	Book	2024	First Edition	Book

4	Impact Of Informal Activities In Transitional Spaces On Informal Learning Of Students In Architectural Education Author: Ar. Abhijit S. Marawar Dr. Raminder Kaur	Educational Administration: Theory and Practice	2024	ISSN 2148-2403 Volume-30 Issue-3 Pages-721-730	Scopus
5	Student's Preference for Informal Learning Through Informal Activities in Architecture College Transitional Spaces Authors: Ar Abhijit S Marawar, Dr. Mahendra Joshi	Journal of Propulsion Technology	2023	ISSN 1001-4055 Volume-44 Issue-3 Pages-619-630	Scopus
6	Effect Of Informal Learning Activities In Transitional Spaces On Informal Learning Of Architecture Students	European Chemical Bulletin (ISSN 2063-5346)	2023	ISSN 2063-5346 Volume-12 Issue Special Issue-3 Pages-1667 – 1677	Scopus

	Authors: Ar. Abhijit S. Marawar Dr. Mahendra Joshi				
7	Transitional Spaces: Optimizing Informal Learning Environments Authors: Ar. Abhijit S. Marawar Dr. Mahendra Joshi	Conference on International Built Environment science and technology	2021		Conference Presentation
8	Transitional spaces an Efficient informal learning spaces Authors: Ar. Abhijit S. Marawar Dr. Mahendra Joshi	Conference Architectural education and research 2021	2021		Conference Presentation
9	Device for Activities associated with transitional spaces as informal learning for students of architecture colleges **(Patent) Owner Details:**	Intellectual property office **(Patent)**	11/02/2025	Design Application number: 6423156	

	Ar. Abhijit S. Marawar Dr. Raminder Kaur				