

Need for Paradigm Shift in Pedagogy for Teaching the Fundamentals of Physical Planning Education

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Abstract: In general, the field of physical planning is multidisciplinary in nature and is concerned with planning of landuse, environment, infrastructure, transport networks, housing, etc., to meet the present and future needs of the people. One of the biggest challenges is teaching the fundamentals to the student beginners, thus orienting them towards such a multidisciplinary and dynamic field. In most institutes offering planning education in India, the fundamentals are taught through the studio on graphics and presentation techniques. However, the basic curriculum of this studio is most frequently oriented towards and influenced by the field of architecture than physical planning. Due to this, very often the students find it difficult to relate the knowledge gained in the first studio to the subsequent studios of the planning course.

This paper attempts to relook at the pedagogy adopted for teaching the fundamentals of physical planning education. For this purpose, the authors discuss the most frequently adopted methods of teaching the first planning studio highlighting their merits and demerits. In this paper, the authors share their own pedagogical experimentation in teaching this studio. After a comprehensive review and analysis of various teaching approaches including the learnings from the experimentation, the authors emphasise a need for paradigm shift in pedagogy for the first planning studio, thus orienting the students more towards the field of physical planning.

Keywords: Planning education, teaching pedagogy, bachelor of planning, physical planning, studio curriculum.

1. INTRODUCTION

In professional planning education, studios are considered to be the core for 'learning by doing', as they involve practical projects with workshop-type and tutorial based learning. In the first planning studio of the undergraduate course, usually introductory knowledge and course fundamentals are taught. It is considered to be a space or place that enables transition of students into academia and the planning profession [1]. The first year studio facilitates a major change in overall perception of the students towards education and learning. They learn a new language different from what they learnt before [2].

The studio projects help in stimulating the enthusiasm and channelling the energy of the students into positive learning. A few studios focus on teaching the drawing and graphic design, which are fundamental to problem solving and the planning process. Problem based learning is experiential, as there is no one single path to problem solving. Therefore, usually planning studios are based on contemporary planning issues and concerns [1]. A strong base in the first studio can help orient the students better towards the discipline. Conversely, lack of strong relevant base can often deviate them from their discipline.

2. FIRST STUDIO CURRICULUM

In general, the curriculum of the first studio is designed to equip students with basic and necessary skills to carryout planning projects/ works in the subsequent years during the course. It includes problem based learning; project based assignments and other multiple modes or approaches that facilitate active teaching and learning [3]. Course curriculum is one of the key guiding factors for

provision of the required knowledge base to the students.

Therefore, this prompts the need to understand the first studio planning curriculum and its relevance to the profession of planning.

As per the ITPI (Institute of Town Planners, India) (2013) recognised list of planning courses and schools in India; bachelors/ undergraduate degree in planning is offered by five government institutes. Among them, three central level institutes [School of Planning and Architecture (SPA), Delhi, SPA Bhopal and SPA Vijayawada] and two state level institutes (SPA, Jawaharlal Nehru Architecture and Fine Arts University and Guru Ramdas School of Planning, Guru Nanak Dev University) offer this course [4]. Along with the planning courses, these institutes also offer degree courses in architecture. This co-existence could perhaps be one of the reasons for a substantial similarity in the syllabus of planning and architecture first year studios.

The curriculum of the above mentioned institutes, largely follow the framework of the *Model Curriculum for Undergraduate Programme - Bachelor's Degree in Planning* (2008) prescribed by *All India Council for Technical Education*. The broad structure of this model curriculum for first year planning studio / lab includes introduction to drawing equipments and mediums; using of points, lines and polygons; concepts of scales and proportions; perspective drawings; and appreciation and presentation [5]. However, the curriculum does not specify the scale at which the exercises have to be carried out. Also, for conducting the studio there is no specific reference to either building or site level. This curriculum

provides a base dealing with general concepts of drawing and not much specific to planning profession.

3. TEACHING PEDAGOGY

3.1) Teachers' Feedback: The most common feedback received from the faculty members teaching the first planning studio across various institutes revealed that this studio in a majority of institutes, in general, is not treated to be as important as the studios of the subsequent semesters. According to them, the teaching pedagogy is oriented more towards and influenced by the field of architecture. Usually, architectural basics are taught to the students of planning. This can be corroborated from that the fact that these basics often include the following architecture related contents: Basic forms of buildings including the three dimensional (3D) views and projections of buildings, anthropometrics and furniture

layout of room, measured drawing exercises including the architectural building drawings, concepts of scales and proportions of different objects and rooms, and model making of building blocks. However in the subsequent semesters, the studios focus more on core planning related aspects such as basemap preparation, area, neighbourhood, urban and regional. Therefore, apparently there is a visible gap in the syllabus contents of the first and subsequent studios. This establishes that the curriculum, prevailing practices or paradigms of pedagogy for teaching physical planning education largely draw inspiration from the discipline of architecture.

3.2) Teaching Methodology: The following is the most common methodology followed or adopted by the faculty members across the institutes. This is based on the feedback received from the faculty interviewed:

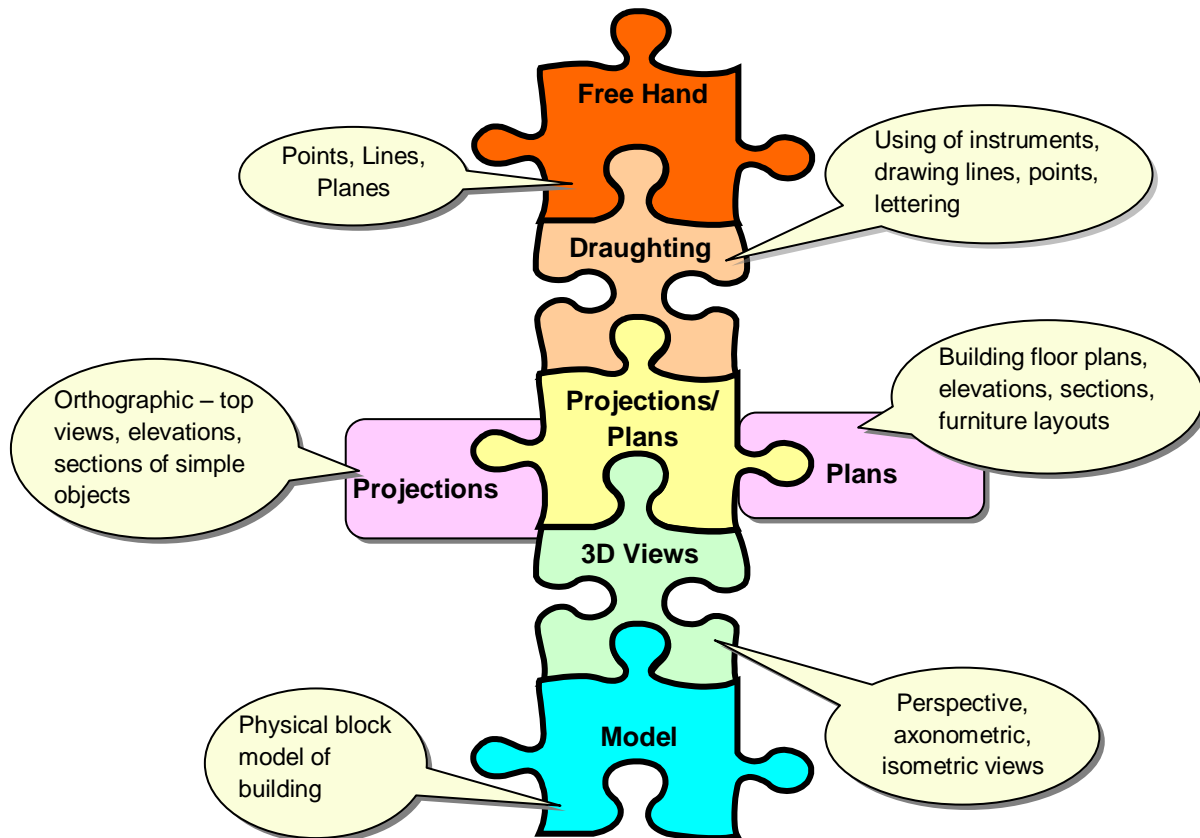


Figure-1: Most commonly followed teaching methodology in institutes offering bachelors of planning

It was found that the approach adopted in general, was usually from the two dimensional (2D) to the three dimensional aspects of the space. Most frequently, this was done with exercises related to architecture, such as building floors plans, furniture layout, building model, etc. However, exercises assigned were not always related to the discipline of planning.

3.3) Students' Feedback: To understand the learning difficulties and other related concerns of students, a survey was conducted across the institutes. Atleast four students of the bachelors degree of planning from each institute were chosen to record their responses relating to the first year studio. A summary of the feedback and analysis is presented below:

A majority of the students expressed the following concerns:

1. The exercises assigned in the first planning studio were more architectural related and therefore the learnings were of not much relevant for undertaking further studio exercises on planning.
2. They were uncertain about the application of the learnings.
3. Most often only the basics of drawing such as line, planes, etc., were taught with no practical application.
4. Necessary exposure to the site through visits, field studies, etc., was not provided, which was a clear deterrent in the overall understanding of the space and its related aspects such as scale, proportion, etc.

The above concerns reinforce the need for a paradigm shift in teaching the first planning studio.

4. PEDAGOGICAL EXPERIMENTATION

A pedagogical experimentation was carried out to address the issues pertaining to the prevailing approaches or paradigms in teaching the first planning studio. The details are as follows: This studio was conducted during the year 2014 at SPA Vijayawada. The broad objective of the studio was to orient students to physical planning. It was aimed to provide exposure to various types of landuse activities specially focused on streets.

4.1). Teaching Philosophy: The curriculum contents were limited to the basic drawing and graphic presentation skills. However, an attempt was made to teach the contents through a project on mapping. Contrary to the conventional pedagogy of teaching the two dimensional aspects of the space first and then followed by the three dimensional aspects, a deliberate reverse approach was adopted.

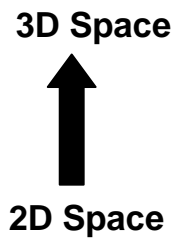


Figure-2: Routine / Conventional Approach

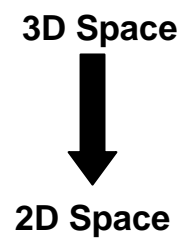


Figure-3: Reverse Approach

The three dimensional aspects were introduced to the students first, so as to appreciate the volume and other related vertical attributes of the space. The underlying philosophy was to enable the students to relate the two dimensional drawings to the real ground. Also, to make

connections between the volumes, planes and points. This was done with the help of physical models, demonstrating the representation of three dimensional objects as planes, planes as lines and lines as points. Further, indicating their applications in map preparation.

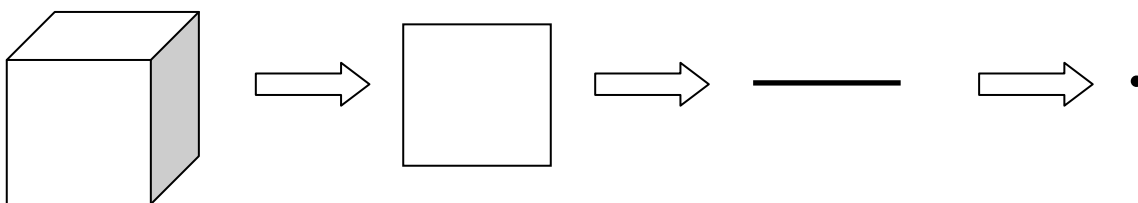


Figure-4: Representation of three-dimensional and two-dimensional objects

The contents of the syllabus on usage of lines, points, polygons, shapes, forms, scale, proportion, etc., were taught with the help of an exercise on street mapping in One Town area of the city Vijayawada located in the Indian state of Andhra Pradesh. This was initially carried out in groups and later individually. The total class strength was divided into eight groups, consisting of three

students in each group. Eight streets of not more than half a kilometre stretch were identified based on their predominant street activities. Each of the groups was assigned with one street.

4.2) Teaching Methodology: The studio teaching methodology followed is as follows:

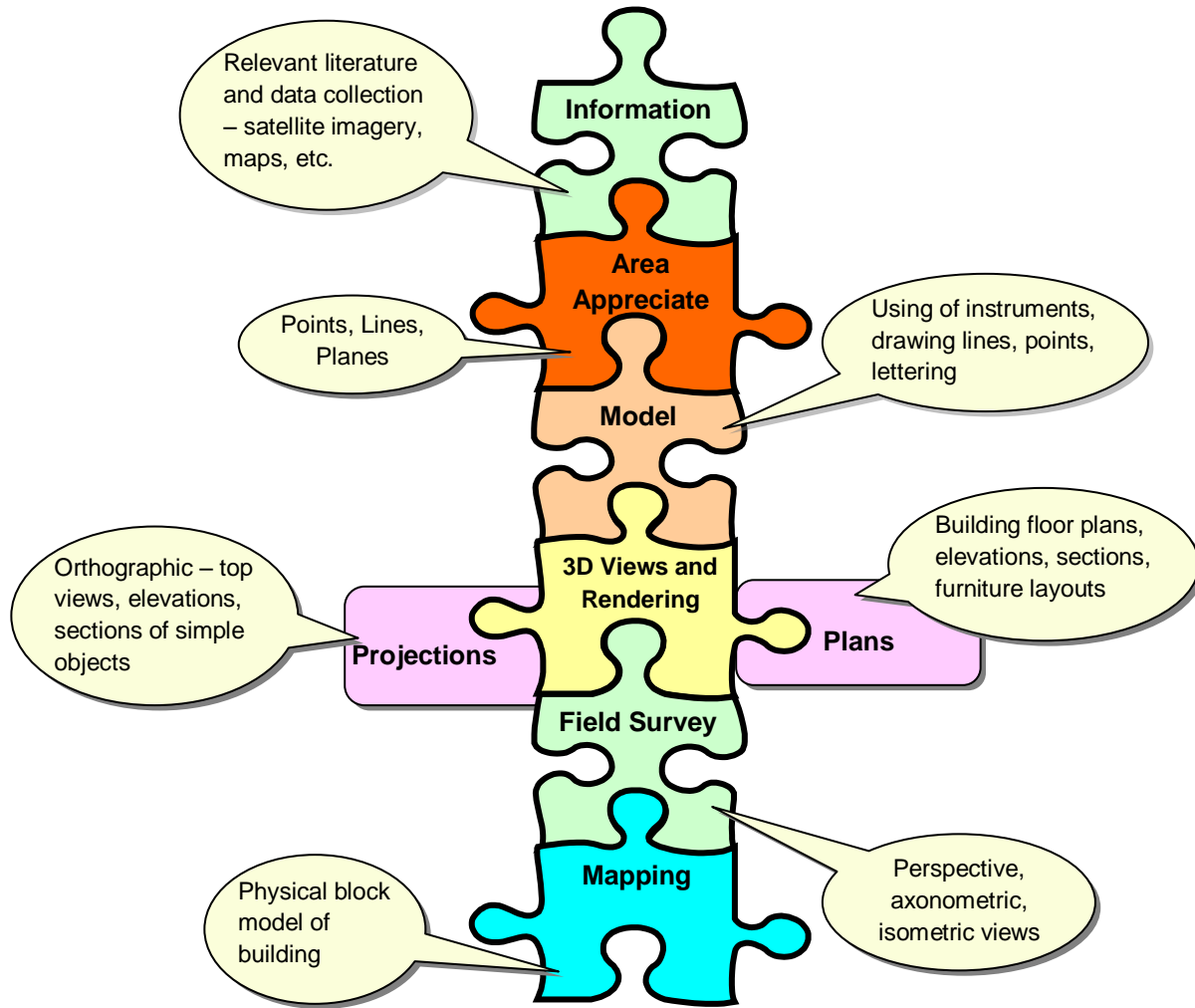


Figure-5: Methodology followed in teaching the studio

a) **Stage-1: Relevant Information**– In this stage, the relevant literature on mapping in general, and basemap preparation in particular, was studied. As a part of this, sample maps were collected and map reading was taught. In addition, necessary information / data such as satellite imagery, maps from various secondary sources, etc., was collated. The identified streets were located on the imagery



Figure-6: Location map



Figure-7: Satellite image of the street

b) **Stage-2: Area appreciation**– This stage included the site visit (reconnaissance survey), audio visual documentation and sketching to relate the identified street on the ground and to understand the nature of street activities. In this stage, the concepts of scale and proportions were taught through onsite free hand sketches and photographs of street views. Besides, sketches of the internal views of the street based on the photographs were done. These sketches were linked to the satellite image relating to the street activities.



Figure-8: Onsite sketching by student

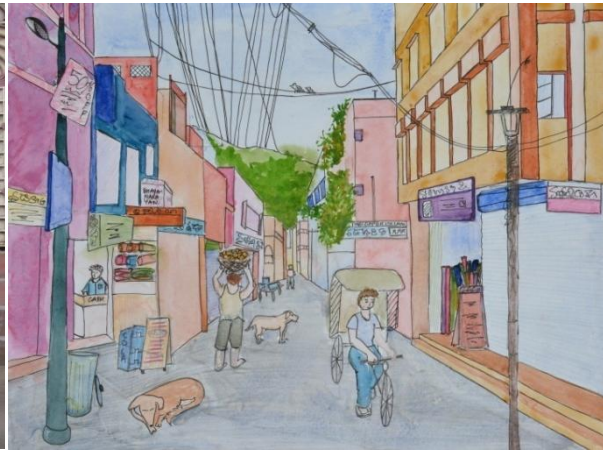


Figure-9: Sketch-Perspective view of the street

c) *Stage-3: Physical model*– Physical block models as buildings, trees, etc., were translated into basic three dimensional geometric forms. were made to appropriate scale based on the imagery, photographs and sketches. The real ground features, such



Figure-10: Hands-on workshop



Figure-11: Physical block model

d) *Stage-4: Three dimensional views and rendering*– as axonometric, isometric and perspective views including Based the physical models, three dimensional views such rendering techniques were taught.



Figure-12: Hands-on workshop on rendering

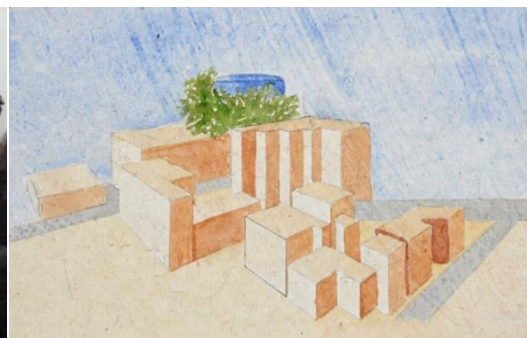


Figure-13: Rendering of the street view

e) *Stage-5: Field Survey* – In this stage, the focus was on enabling the students to understand both the horizontal and vertical spaces; mass-void relation i.e., buildings and open spaces; and landuse activities and re-confirmation of the model. Besides, audio visual documentation was also done.

f) *Stage-6: Mapping*– Basemaps of the streets were prepared based on the high resolution satellite image, audio-visual documentation, and other related information collected from the field surveys. Also, the landuse activities were mapped based on the already collected street activity information. As a part of this, different landuse coding and colouring was also taught.



Figure-14: Basemap

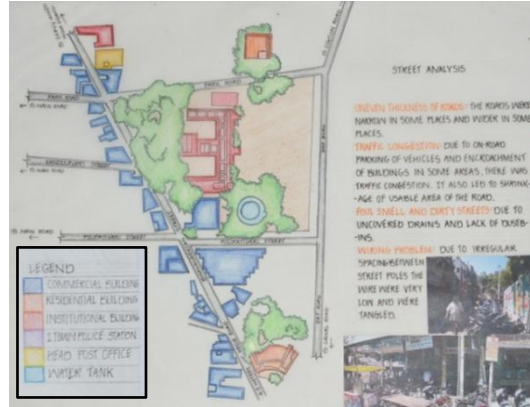


Figure-15: Landuse map

To ensure the quality of work of the students, each of the stages was carefully supervised through continuous and progressive assessments including one-to-one interactions,

group discussions, presentations, exhibitions, and studio workshops



Figure-16: Progressive assessment



Figure-17: Progressive assessment

4.3) Assessment of Learning Difficulties:

After the completion of the project, learning difficulties of the students were identified through a graphical method 'Wheel of Learning Difficulties' (WLD). Thereafter, the difficulties relating to skill development exercises and their applications were assessed. Three different colours were used to assess the level of difficulty as follows:

- i) Red colour indicates severe difficulty
- ii) Green colour indicates moderate difficulty
- iii) Blue colour indicates mild difficulty

WLD consists of four main components of the skill development. Each of these components was divided into four sub-components.

- i) Survey – audio-visual (photos and videos), measuring, activities, and sketching
- ii) Physical model – material, scale, workshop techniques and finishing
- iii) Rendering – medium, drawing, view and detailing / colouring
- iv) Map preparation – map contents, symbology, scale and tracing



Figure-18: Students' feedback through WLD

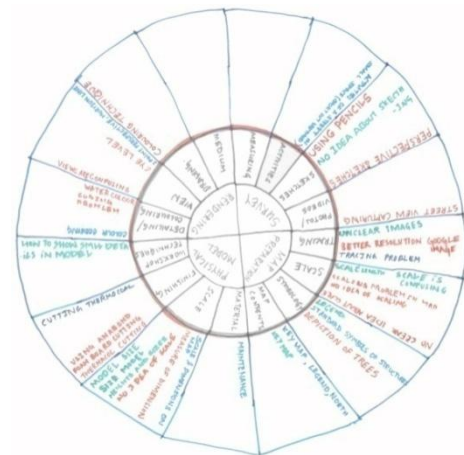


Figure-19: Wheel of Learning Difficulties

Table: Learning difficulties- Reasons and Suggestions

Components	Sub-Components	Identified learning difficulties			Reasons for difficulties as mentioned by the students	Suggestions to focus on teaching the following
		Severe	Moderate	Mild		
Survey	audio-visual	street view capturing	--	--	due to narrow width of the street	techniques of photography
	activities			identification of activities in small space	due to the complex/ mixed nature of the activities	categories of different activities
	measuring	--	--	--	--	--
	sketching	using of the pencil, perspective sketches	not able to sketch onsite	--	due to lack of student's sketching skills	more practice exercises on sketching
Physical model	material	--	--	maintenance of material	no prior knowledge of working with different materials	techniques of working with different materials
	scale	measure of dimensions, no idea of scale	model height and size	scale and dimensions on map	understanding the suitable scale	inputs on various scale dependent factors
	workshop techniques	--	showing small details in models	--	inappropriate selection of suitable material. Model not made at suitable scale	techniques of material selection
	finishing	Using the adhesive	--	cutting the material	lack of necessary skills for model making	model making skills and finishing
Rendering	medium	--	--	--	--	--
	drawing	colouring techniques	--	--	not familiar with techniques of using different media	techniques of using different media
	view	technical details of perspective drawing	--	two point perspective, horizon line	no clarity in technical aspects of perspective drawing	demonstrating technical aspects through models
	detailing / colouring	water colour rendering	--	colour coding	lack of practice in using rendering material	techniques of using different media
Map preparation	map contents	--	key map	keymap, legend, north point	problems relating to map representation	standards of map contents
	symbology	depiction of trees	legend	standards, symbols of structures	problems with drawing symbols and depiction of features	standard symbology
	scale	scaling the map	--	--	relating the map to the ground	enlargement and reduction exercises
	tracing	low resolution of the image	unclear images	tracing problem	poor image quality	improving the image resolution

5. CONCLUSION

5.1) Specific Approach - A general feedback from the students revealed that a majority of them do not seem to have faced severe learning difficulties. However, a few select students who had no prior adequate skills in drawing, sketching and rendering seemed to have faced the difficulties. Therefore, this prompts for a need to adopt different pedagogical approaches depending on the different learning capabilities and skills of the students. For this purpose, the students may be categorised into groups depending on their skills in various aspects of the studio work such as model making, drawing, sketching, rendering, etc. Accordingly, the pedagogical approaches must be adopted to address and resolve the difficulties faced by each of the groups.

5.2) Multidisciplinary Inputs - In addition to the inhouse expertise, guest lectures on photography, model making, rendering, etc., from various subject experts will be helpful to overcome the learning difficulties mentioned in the above table. Necessary precautions are needed to be taken to ensure and encourage active participation by the

students in doing their studio work. This can be achieved through a combination of classroom lectures, presentations, field studies, guest lectures, workshops, etc.

5.3) Curriculum Design - The curriculum of the studio should be designed to cater to the needs of the profession and the industry. In designing of the studio curriculum, necessary precautions must be taken to avoid any strong influences from the allied disciplines. The studio curriculum should foster learning new language of planning. It is important to achieve vertical integration of syllabus i.e., with the studios of the higher semesters and a horizontal integration i.e., with the theory subjects offered in the same semester.

5.4) New Paradigms of Teaching - There is an utmost need to treat the first planning studio as one of the most important beginning steps towards the multi-disciplinary profession of planning. Constant and continuous innovations in the pedagogical approaches are the need of

the hour. The institutes offering planning courses should encourage new paradigms, so as to keep pace with the rapidly changing profession. The emphasis must be on ensuring a strong base and thus enabling the students to orient and relate to the profession in a better way.

Note: The views expressed in this paper do not reflect the views of the institute to which the authors are associated with, in any way.

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