

Defying a Legacy or an Evolving Process? An Evolutionary Account for a Post-Pandemic Design Pedagogy in Architecture and Urbanism

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Abstract

The Covid-19 condition has prompted serious questions about the challenges facing the established two-centuries old canons of education in architecture and urbanism. This paper establishes an evolutionary account on how design education in architecture and urbanism has arrived at the pre-Covid-19 condition, explores current challenges, and, in the process of encountering the Covid-19 condition asks the question of what the scope of opportunities to meet these challenges is. A chronological analysis of design pedagogy is undertaken to instigate a debate on its future in a post-pandemic environment. The paper captures the salient characteristics of the legacy model which is inherited from historical schools, demonstrates the influence of, and resistance to, this model (1960s), identifies the qualities of various alternatives including 10 ground-breaking alternative pedagogies (1970s-1990s), highlights strengths of further alternative approaches including critical inquiry, the process-based and learning-by-making pedagogies (2000s) and the social construction-based pedagogies (2010s). Scrutinising the consequences of the Covid-19 condition and the associated "Transitional Emergency Model," the analysis articulates the persisting challenges and examines current adaptations while outlining the scope of future opportunities for a future responsive pedagogy for architecture and urbanism in a post-pandemic world.

1. Introduction: Covid-19 Confronting a Canonical Tradition

Formal education in architecture and urbanism, as we know it today, has been developed through two significant approaches. Firstly, more than two centuries ago, as a result of government initiatives as it was in the case of the Beaux-Arts and the Art Academies in France. And secondly, as a consequence of the Industrial Revolution and craft and guild movements of the late 19th Century, as it was in the case of the Bauhaus in Germany, and its counterpart Vkhutemas in Russia. These classical schools are the fundamental models of architectural and urban education that have evolved into variations which were adopted and adapted in other parts of Europe, North America, and later transposed to other parts of the world.

The Covid-19 condition has instigated serious questions about the challenges facing the established two-centuries old canons of education in architecture and urbanism. This includes questioning their suitability when applied to a post-pandemic virtual world, and what the future of architecture, as part of the current university system, might be. However, the repercussions of the condition that the global academic community is currently encountering, were originally predicted during the mid 1990s, through various works of both visionaries and academic enthusiasts. The visionary work of William T. Mitchell and his substantial books including the trilogy that engages with the potential of virtual and digital futures: *City of Bits* (1995), *e-topia* (1999), and *Me++* (2003), in which he introduced ideas related to the creation of digital communities, and offered answers to questions about how the transformation of digital communication, wireless technology and the creation of an interconnected world are changing our environment, our education, and our lives (Mitchell, 1995, 1999, 2003). During the 1990s and 2000s, the work of many scholars (Maher & Simoff, 2000; Kvan, 2001; Reffat, 2006; Hou & Kang, 2006; Caneparo, 2007) introduced conceptual understandings and practical approaches and models, that advocate a dramatic departure from the 'physical' into the 'virtual'.

Primarily, transitioning from the 'physical' to the 'virtual' does not seem to be new; it was called for more than three decades ago (Salama, 2020b). What is new, however, is the sudden shift and the intensity of virtuality that most organisations, communities, and higher education institutions were not prepared for,

in addition to the scale and level of urgency required. Furthermore, while societies, communities, and individuals have been at odds speculating the future, this future arrived suddenly and unexpectedly at our doorsteps—perhaps forcefully, or arbitrarily, or in a ‘shock and awe’ manner—but indisputably with the additional price of disease, panic, mental illness, restrictions on movement and travel, and public and personal health. While this condition has affected societies and communities in varying degrees, the impact on higher education and, in particular, on applied fields such as architecture and urban design, has been substantial. In a period of less than three weeks, during March 2020, schools of architecture across the globe, had to make urgent decisions to desert face to face learning in physical spaces, to transition to a largely new and unexplored online world. In this digital world—where the only form of group or collective activities could be safely offered—new approaches to learning and teaching, collaboration, engagement and interaction, review and assessment, and celebrating student achievements, were explored. It must be noted that while many universities did already have infrastructure for online activities in place, these required a major upgrade and a rapid switch to facilitate maximum capacity and quality.

Historically, architecture schools around the globe have been constantly challenged, trying to do things differently (Million et al., 2018; Teymur, 1992). This is the crux of architectural education and includes what used to characterise it since its inception, through the evolving versions of Beaux-Arts, Bauhaus, and Vkhutemas models that were contextually appropriated in the past. The situation that architectural education is facing now, is not simply a response to the Covid-19 condition. Rather, that which has evolved over the past two hundred years, is rapidly changing, and is no longer appropriate, nor relevant. Various reactions and responses to address this challenge are now in progress and taking place within a very fluid scene. Nonetheless, it is evident that current discussions are centred on the immediate past and on the teaching-practices preceding the Covid-19 restrictions and how these are changing, without sufficient reflection on the course of history. In response, this paper calls for a more reflective analysis on how design education in architecture and urbanism has evolved and arrived at the pre-Covid-19 condition, what some of the current voices of those involved (educators and students) are calling for, and, in the process of confronting this challenging situation, what the scope of opportunities that enables the evolutionary process to take its natural course, actually is.

2. Lines of Inquiry for Constructing the Narrative

Expanding the initial discourse that has evolved since the Covid-19 condition in March 2020 (Abusaada & Elshater, 2021; Salama, 2020a & 2020b; Salama & Crosbie, 2020; Alnusairat et al., 2021; Ceylan et al., 2021; Morkel et al., 2021a; Rooij et al., 2021; Myers & Bratishenko, 2021; Soccio et al., 2021; Varma & Jafri, 2021), the premise of this paper, is the postulation that understanding current efforts to meet Covid-19 related challenges, cannot be fully grasped in isolation from appreciating the course of history. Therefore, based on extensive review and critical analysis of design studio pedagogy, this paper identifies the significant characteristics of studio pedagogy and their evolution since the establishment of the fundamental models of education in architecture and urbanism. This affords a more in-depth understanding of whether current challenges resulting from Covid-19 are defying the canonic traditions and the inherited practices of studio pedagogy, and whether opportunities can be envisaged. A brief chronological characterisation of studio pedagogy offers opportunities for debating the future of studio pedagogy in a post-pandemic environment. It should be noted in the context of this analysis, that the term ‘model’ is utilised to represent a set of values and norms that give legitimacy to a set of approaches to undertake design activities in the design studio. as a platform for knowledge acquisition, assimilation, application, and production.

Four lines of inquiry (LoQs) are envisaged as action-based objectives, that enable the development of an evolutionary narrative (Figure 1); these include:

- a. *Identifying the key features of the legacy model, which evolved from the canonic traditions of the Beaux-Arts, Bauhaus, Vkhutemas models.* This model emanates from these fundamental approaches to architectural and urban education by articulating the associated influence and resistance to its outdated characteristics and involves a critical analysis of these influences and their impact.
- b. *Examining the evolution of design pedagogy.* This includes the intervening 90 years, from the closure of the Bauhaus in the 1930s to the present, and involves identification of *critical and transformative models and constituents* by briefly examining the following three premises:

- 10 ground-breaking *alternative pedagogies* which have evolved throughout the period from the mid-1970s to the late-1990s.
 - *Themes and variations* developed during the 2000s and emanating from the discourse on alternative pedagogies including *critical inquiry*, *process-based pedagogy*, and the introduction of *digital technologies*.
 - *Social construction in design learning* and the associated *community design*, *design-build*, and *live project* pedagogies that have origins since the late 1960s, with fluctuating interest for three decades, but which flourished during the 2010s.
- c. *Exploring the primary aspects of the consequences of the Covid-19 condition and the associated “transitional emergency model.”* This includes examining responses, outlining experiences, and identifying persisting challenges during 2020-2021.
- d. *Outlining the loss of the stable state and introducing the scope of future opportunities.* This is addressed by highlighting key potential interventions in the current delivery system of pedagogy in architecture and urbanism.

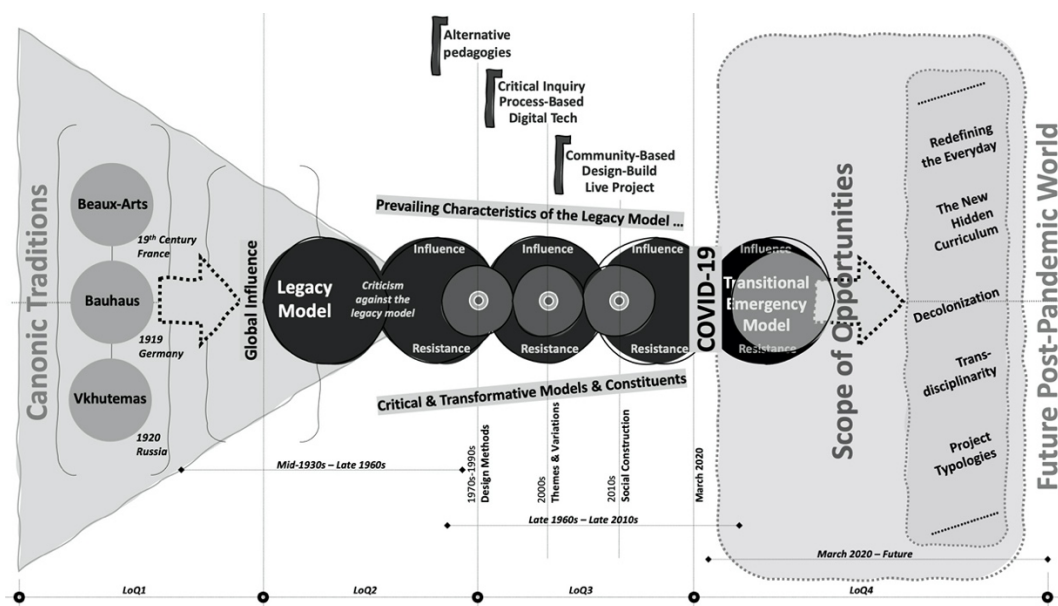


Figure 1: Lines of Inquiry (LoQs) for Constructing a Narrative of Design Studio Pedagogy for a Future Post-Pandemic World.

3. More than a Century Pre-Covid-19: Influence of and Resistance to the Legacy Model

The legacy model of pedagogy in architecture and urbanism follows the main principles of the models that were conceived, developed, and embroidered throughout the nineteenth and twentieth centuries. While the impact of the Beaux-Arts and the Bauhaus on architectural and urban education was significant, the Russian Vkhutemas had very limited impact. It has not received the same global attention the French and German schools have received, predominantly in the Global North. Yet, such a legacy encountered significant challenges that emerged since the 1960s. This was as a result of academic criticism, the associated social movements, and the rise of research organisations, advocating an urgent departure from the outdated canonical pedagogical traditions.

3.1 Influence of a Pedagogical Legacy

Following the relocation of many of the Bauhaus masters to the United States, new schools of architecture were established; and these architecture and design programs were founded on the principles of the Bauhaus and the Modern Movement. The theories and ideologies of these new schools had a major impact on the already established departments, which had been underpinned by Beaux-Arts practices.

The first curriculum that followed the Beaux-Arts approach was established at MIT (Massachusetts Institute of Technology), under the guidance of French instructors whose curriculum was based on the 'atelier' system. These instructors helped to shape the MIT in-house version—the so-called 'design studio.' Bauhaus education was subsequently widely applied in contemporary architectural education, through the influence of former Bauhaus instructors (Beinart, 1981; Balfour, 1987; Ozkan, 1986). During the 1940s and 1950s, scholars from around the world (including Korea, China, Japan, and the Middle East), studied in the United States and Europe; their instructors taught principles influenced by the pioneers of the Modern Movement and their followers. Upon their return home, many of these graduates introduced and applied what they had learned, to their own countries. This resulted in a fluid but direct link, from notions and principles of Beaux-Arts and the Bauhaus to foreign scholars, and thus impacting design education in architectural schools globally (Salama, 1995 & 2015).

Ultimately, however, the influence of the Beaux-Arts was superseded by that of the Bauhaus. and the teaching methods of its founder Walter Gropius at Harvard (Balfour, 1987; Ozkan, 1986). During the period between the mid-1930s and the mid-1960s, architectural design education was similar in most schools and countries. Through providing design instruction in studio environments, the process of educating students usually started with developing their skills in graphics. These studios were scaffolded by practical courses in descriptive geometry, freehand drawing and sketching, and theories of colour. Additional support included more scientific classes providing instruction in structural forms, the application of materials, building equipment, and the history and theory of architecture (Bosworth & Jones, 1932; Weatherhead, 1941).

In essence, design instruction during this Legacy Model period was divided into two distinct components and utilised the two distinct approaches: (1) either the principles of classical architecture—Beaux-Arts; or (2) the principles of modern architecture—Bauhaus (Salama, 1995). Within the first model—which followed the Beaux-Arts approach—students often started with instruction in the use of instruments, then they had to make carefully rendered drawings of various details of classical architecture and its ornamentation, and the final product was a large size drawing, an actual architectural composition (Beinart, 1981). In the second model—which followed the Bauhaus approach—students often started with classes in fundamentals of form, colour theories, and craft training, and following this introduction to design, students then embarked upon more realistic problems, on a graduated scale of complexity (Balfour, 1987). Similarly, students were provided with an architectural program or a design brief, outlining the conditions and requirements of the building and urban context required to be designed, as a capstone requirement, in both models. To meet the requisite threshold standards, students were allocated twelve hours to sketch a general schematic design, without the aid of any documents or notes.

3.2 Resistance to the Established Canons

In the early 1960s, questions began to arise and challenge the precepts and traditional approaches to studio pedagogy in architecture and urbanism. This was partially due to emerging contemporary priorities such as regional, town and city planning, and the adaptive re-use and upgrading of historic districts in both newer urban and older historic areas. Most of these issues developed in response to unprecedented population growth and problems associated with increased urbanisation. Following this, a dramatic youth-driven 'social revolution' characterised by mass strikes, protest marches, sit-ins, themed rock-concerts and even anti-social acts, occurred throughout Europe and North America in the late 1960s (Sanoff et al., 1968). The events of these times, during which radical youth voiced concerns about social, environmental and urban issues, challenged and transformed societal perceptions (and education in architecture and urbanism) (Esherick, 1977; Oliver, 1981; Bostick & Pettena, 1985). These events had significant and far-reaching impacts on how architecture and urbanism were taught.

One significant and influential change was the establishment of a considerable number of collaborative and socially concerned design and architecture societies, organisations and associations. These included groups such as: the Environmental Design Research Association (EDRA) in the USA; People and Physical Environment Research (PAPER) in Australia; and the International Association of People-Environment Studies (IAPS) in Europe. An ambitious series of socially aware conferences, symposia and forums were hosted, during which views, ideas and issues were shared, discussed and debated by architects and building design professionals from around the world. Among the most important conferences were the 'Dubrovnik Congress' in former Yugoslavia, the inaugural conference of the 'Design Methods Group' (DMG), and the first conference of EDRA (Sanoff et al., 1968; Smithson, 1968; Lenikowski, 1982). These conferences rejected the concepts and precepts of the Modern Movement, and rather, introduced innovative and more socially aware and inclusive ideas and philosophies. These included the consideration of human and social sciences, as well as culture and regionalism in design, and the participation and involvement of users in the design process. These notions were, in part, a response to the increasing frustrations and subsequent social problems in building design, which had been influenced by and instigated through, following the International Style and Modern Architecture (Moore, 1979).

These events and conferences significantly influenced architectural education over the past four decades, but especially during the 1980s and the early-1990s. Response to these changes was global, resulting in the establishment of new architectural and design organisations in different parts of the world. Examples of organisations that introduced new fields of inquiry included: the International Association for the Study of Traditional Environments (IASTE) at the University of California Berkeley; the Environment-Behaviour Research Association (EBRA) in China; the Architectural Humanities Research Association (AHRA) in the United Kingdom; and the International Network for Traditional Building, Architecture and Urbanism (INTBAU), with the main chapter in the United Kingdom and branch chapters globally.

These concomitant results of a new thrust in architecture and urban design, empowered the introduction of new more contemporary and practical courses, topics, and specialisations within architectural programs. They were observed together with the introduction of degrees in new fields such as: design methods and theories; community preservation; participatory architecture; environment and behaviour; socio-cultural studies; and more recently, sustainable urban conservation, sustainable design, and sustainable urbanism. However, despite these new developments in architectural and urban education, the design world itself was slow to respond to these emerging new trends. This was in part, because design instruction continued to follow the principles of the Beaux-Arts and the Bauhaus legacy model (Salama, 1998; 2008). In response to this rising interest in addressing socio-cultural issues from the social revolution of the late 1960s, alternative and individual approaches to architectural design education were subsequently adopted during the past two decades (Salama, 2015).

Despite the initial reluctance to adapt to change, a striking new and radical trend emerged in the 1960s and has successfully continued: the introduction of free public forums and services, to propose appropriate architectural design to address and respond to urban problems. This movement began with organisations called Community Design Centres (CDC) (Juhasz, 1981; Bowser, 1983; Gelernter, 1988; Mayo, 1991; McCommons, 1994; Boyer & Mitgang, 1996). As architecture along with other professions awakened to social responsibilities, these centres began to provide architectural and planning services for disadvantaged and powerless communities. While some CDCs were born out of negative responses to ineffective government efforts, others had more positive objectives such as creating neighbourhood playgrounds or designing and providing low-cost housing.

By the late 1960s, however, it became clear that the market for non-profit design services was much larger than originally anticipated, so the concepts and services offered were extended beyond minorities, to many others. This development gave rise to the notion of 'clinics', a logical extension of the original CDCs. These clinics were either sponsored by or located within a school of architecture or were affiliated as a separate but related institution, which included the school's faculty and students. These clinics provided students with hands-on opportunities to work in real life projects, with real clients, and often with local architects. The influence of these socially minded organisations was significant—they directly impacted relevant and ongoing social, psychological, political, and economic issues, in the human-made environment (McCommons, 1994). Later, but especially during the late 1980s and early 1990s, many prominent schools of architecture worldwide embraced and generated versions of the 'clinic' notion, through addressing socio-cultural and ethical issues in an attempt to reposition the role of architects and urban designers.

4. Critical and Transformative Models and Constituents

In a critical, pro-active response to the outmoded and increasingly inadequate legacy model which did not effectively address the design needs of contemporary society, in addition to acknowledgement of the evolving nature of, and changes to the design profession, several alternative pedagogical models and approaches were developed and utilised by educators. These are classified under three premises that include: *ground-breaking alternative pedagogies, themes and variations in studio pedagogy, and social construction in design learning.*

4.1 Ground-breaking Alternative Pedagogical Models

Predicated on the criticism against the legacy model, 10 ground-breaking *alternative pedagogical models* emerged during the mid-1970s and continued to the end of the 1990s (Table 1). While discussing the characteristics of these models individually goes beyond the purpose of this analysis, key characteristics that depart from the legacy model as *Alternative Pedagogical Models*, are uncovered in Figure 2 and Table 2.

Alternative Pedagogical Models	Key Reference
The Case Problem (Experimental) Model	Symes & Marmot, 1985
The Analogical Model	Simmons, 1978
The Community-based Design Learning Model	Sanoff, 1979; 1981
The Hidden Curriculum Model	Dutton, 1987
The Pattern Language Model	Davis, 1983
The Concept-test Model	Ledewitz, 1985
The Double-layered Asymmetrical Model	Goldschmidt, 1983
The Energy-conscious Model	Cole, 1980
The Exploratory Model	Robinson & Week, 1983
The Interactional Model	Gelernter, 1988

Table 1: Alternative Pedagogical Models, mid-1970s to the late-1990s.

The models were partly conceived in response to the needs for improving the systematic design process promoted by the design methodology movement of the 1960s and the 1970s. The 'analysis-synthesis' approach divides the design process into two distinct phases: (1) the well-defined analysis phase; and (2) the rather unstructured synthesis phase. Firstly, during the analysis phase, information relevant to the problem is collected and analysed to help formulate a better understanding of the design problem. While this phase is more rational and analytic, it is followed by the second intuitive and creative synthesis phase. The principal criticism of the analysis phase was that the results were usually ponderous statements of the blindingly obvious (Archer, 1969) and that design was handled within a fragmented linear sequence. One negative result was that the student was often unable to translate the results of the first analytical phase into a successful design (Ledewitz, 1985; Salama, 2005). Typically, the student was guided to believe that an optimal solution could and would signify the end of the design process, and it was assumed that a sudden creative leap would magically translate the design brief or program, into a design solution. No effort was made for appropriate feedback, support and intervention strategies, to encourage students to rethink their way through the problem, in order to progress to a design solution more cogently. As a consequence, students kept searching for unrealisable ideals, and were often unable to complete their designs to meet deadlines.

The notion of design expanded from viewing design effort as merely a problem-solving activity, to the inclusion of alternative activities such as exploration and testing. Analysis of these models demonstrates that they all conceived and perceived design as an activity of conjecture and testing. They defined design as an activity that involved induction and deduction, and that linked theory with particular problems. Despite some curricular differences, most models agreed on the importance of investigating the social and environmental context within which buildings were created. For example, *The Exploratory Model*

[Robinson & Week, 1983] was characterised by considering design as programming and as an activity involving verbal, numerical, and form exploration. While *The Community-based Design Learning Model* (Sanoff, 1979), democratised the design process, and involved clients and users in decision-making practices.

Although there were a wide range of variations in the processes of design and the routes taken in the studio, there were also inherent similarities. For example, the design process in six models considered that the programming (research or developing evidence) phase, which included brief development, was a crucial stage that helped to define design criteria. Several models focused on acquiring knowledge in parallel to producing design alternatives. *The Community-based Design Learning Model* (Sanoff, 1979), *The Hidden Curriculum Model* (Dutton, 1987), and *The Pattern Language Model* (Davis, 1983), all encouraged consensus-forming strategies throughout the process of decision-making. Notably, *The Pattern Language Model* (Davis, 1983), proposed a formulation of language that translated the social and physical relationships of an existing environment, into background information that could be utilised as a basis for design. While *The Community-based Design Learning Model* (Sanoff, 1979), was driven by the goal of transforming behavioural information into architectural form. Similarly, *The Case Problem (Experimental) Model* (Symes & Marmot, 1985) placed emphasis on the importance of instigating interaction with clients and users while design criteria were identified. Social, political, economic, and cultural relations of a society were all integral parts of the design process, in several of these models.

Fundamentally, the models were driven by a wide spectrum of pedagogical orientations and tendencies, yet there were some basic and significant similarities in the teaching methods. All the models emphasised the incorporation and application of inherent and acquired knowledge to particular design situations. Several models promoted student motivation as a major outcome of studio training, and each model approached this in a unique way. While some models stressed individual and group work, others focused on developing the students' critical abilities, in addition to helping them to learn to discriminate relevant from irrelevant information, during different stages of design.

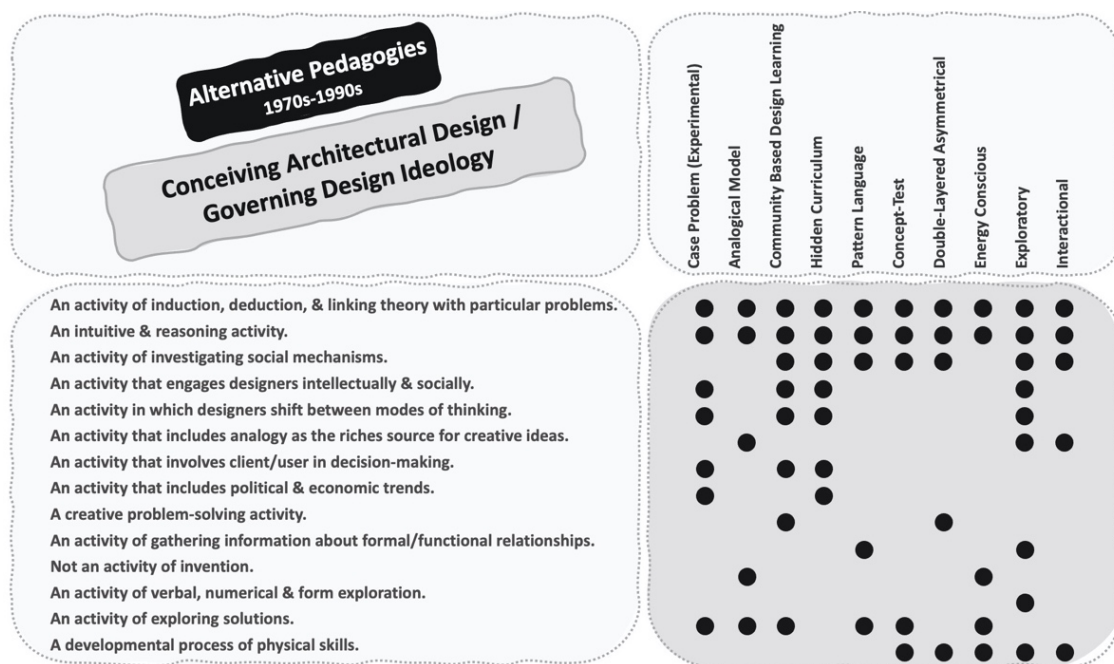


Figure 2: Conceiving Design as a Key Characteristic of Alternative Pedagogical Models, mid-1970s to the late-1990s.

The models generally shared several characteristics, and some mainly focused on one or two specific aspects related to design process or teaching, and learning styles adopted, which characterise them. This reinforces the notion that there are vital differences among design educators, as each teaches and employs methods aligned with their own ideology and in a unique manner. While these 10 models reflect the complexity inherent in design studio teaching practices, three primary themes can be captured from the

collective models. These three themes, which can be used to invigorate the development of a knowledge-based pedagogy without compromising the design skills and abilities of future architects (Salama, 2012) are: (1) environmental evaluation and assessing environments similar to the one being designed; (2) brief development and establishing design criteria as an evidence-based decision making mechanism; and (3) participatory architecture and groups processes, through team collaboration and actual or simulated engagement with clients and users.

Alternative Pedagogical Models	Design Process and Procedures
<i>Martin Symes & Alexi Marmot, 1985</i> The Case Problem (Experimental) Model	<ul style="list-style-type: none"> • Generating schematic concepts • Establishing multiple criteria • Evaluation of concepts • Reviewing design intentions • Developing design proposals
<i>Gordon Simmons, 1978</i> The Analogical Model	<ul style="list-style-type: none"> • Studying the analogous • Slide/graphic presentations • Utilizing the program of an existing building • Developing design proposals
<i>Henry Sanoff, 1979; 1981</i> The Community-based Design Learning Model	<ul style="list-style-type: none"> • Developing and evaluating available information and resources • Defining the design problems • Conducting workshops • Generating alternatives • Alternative testing/community discussions • Developing design schematics
<i>Thomas Dutton, 1987</i> The Hidden Curriculum Model	<ul style="list-style-type: none"> • Developing and evaluating the program • Establishing group dynamics • Generating discussions/ • Consensus reaching • Developing design schematics
<i>Howard Davis, 1983</i> The Pattern Language Model	<ul style="list-style-type: none"> • Identifying the patterns • Groups discussions/defining design intentions • Generating alternatives • Testing the patterns against the alternatives • Developing design proposals
<i>Stephanie Ledewitz, 1985</i> The Concept-test Model	<ul style="list-style-type: none"> • Establishing design criteria • Producing schematic alternatives • Investigating the alternatives • Form experiments • Developing design solutions
<i>Gabriella Goldschmidt, 1983</i> The Double-layered Asymmetrical Model	<ul style="list-style-type: none"> • Information gathering • Defining designing imperatives • Personalizing the program • Developing design solutions
<i>Raymond Cole, 1980</i> The Energy-conscious Model	<ul style="list-style-type: none"> • Providing generic knowledge about energy issues • Simple applications / graphic presentation • Providing specific knowledge • Developing design proposals
<i>Julia Robinson & Steven Week, 1983</i> The Exploratory Model	<ul style="list-style-type: none"> • Problem exploration • Generating verbal and formal ideas • Testing the ideas and concepts • Developing articulated program components
<i>Mark Gelernter, 1988</i> The Interactional Model	<ul style="list-style-type: none"> • Identifying design problems • Generating concepts • Generating and testing new ideas • Conjecture and analysis phase • Developing design solutions

Table 2: Design Process of the Alternative Pedagogical Models, mid-1970s to the late-1990s. (Adapted from Salama, 1995 and 2015).

4.2 Themes and Variations in Studio Pedagogy

Both the preceding alternative pedagogies and the associated architectural design discourse have offered channels for present-day educators to explore the potential of opening up design pedagogy, to a wider array of influences. However, although new and emerging methods of teaching are being applied in many design schools worldwide (Burton, 2018), the legacy model still prevails. The so-called ‘syndromes’ of such opened-up approaches were expressed as fallacies by Kelbaugh (2004). These fallacies, affecting both professional practice and pedagogy, range from architecture’s enthrallment with the cult of artistic talent, to the insistence on artistic originality. Through this change in emphasis, the ethic of architecture as a civically responsible practice has been replaced by the creation of imaginary designs, whose main purposes are only to shock and awe. In such instances, architects and those involved with the profession, have subdued the social dialogue they are supposed to engage in, to prioritise a self-referential role.

In response to the prevailing characteristics of the legacy model and the concomitant criticism, voices of many educators, representing *themes and variations*, have emerged in the 2000s. These include: (1) *Critical Inquiry*; (2) *Process-based Pedagogy*; and (3) the introduction of *Digital Technologies* (Figure 3).

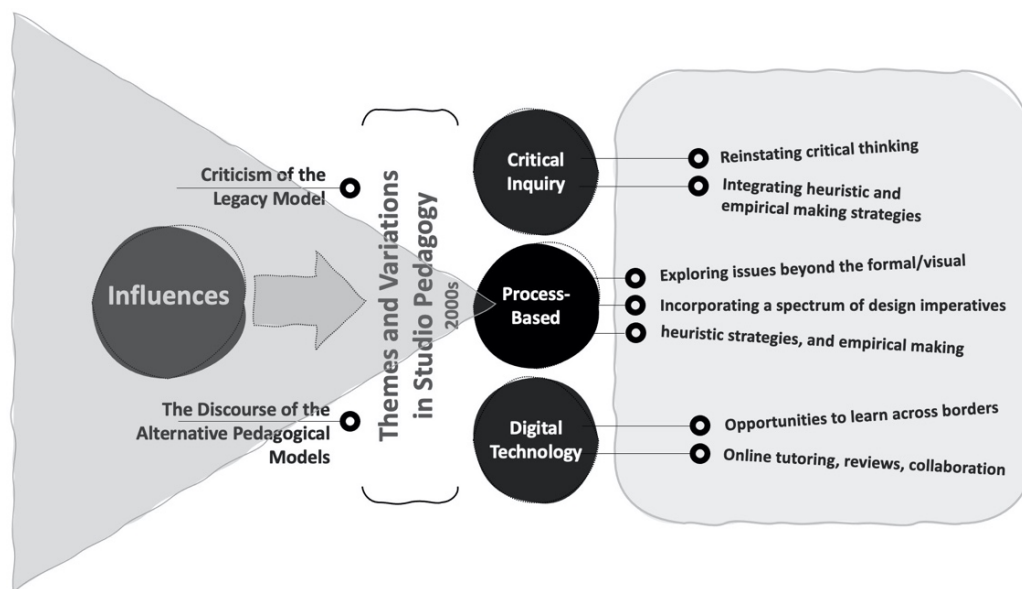


Figure 3: Themes and Variations in Studio Pedagogy, the 2000s to the late-2010s.

Firstly, pedagogical efforts to reinstate the validity of critical inquiry and critical thinking, were fuelled by the ambitions of a knowledge society. Consequently, *Critical Inquiry* is now viewed as an absolute necessity for learning and teaching practices of the 21st century. Aligned with this thinking, studio approaches have accentuated the value of critical thinking (Bose et al., 2006) and its role as it relates to key pedagogical aspects in design, including: (1) critical inquiry; and (2) heuristic strategies and empirical making (Mitchell, 2006; Smith, 2007).

Process-based Pedagogy is another theme which aimed to improve students’ understanding of information relevant to specific design problems, while engaging in generating alternative design solutions (Salama, 2005). It was premised on three assumptions, that students: (1) have a limited set of sources for their ideas due to unfamiliarity with techniques for exploring design issues; (2) have difficulty in exploring issues that go beyond the basic formal and visual principles; and (3) are rarely able to incorporate an array of variables and imperatives into their design solutions. Outcomes of this approach demonstrate that a process-based pedagogy can help learners to have more control over their design actions and decisions (Fernando, 2007; Salama, 2012).

The introduction of *Digital Technologies* including the Virtual Design Studio (VDS) in the early 1990s, resulted in drastic changes to the way in which design studios are facilitated. Efforts to conceptualise the notion of digital communities, offered a platform for long-distance collaborative studios (Beamish, 2002).

The development of computers and access to the internet profoundly impacted both research and studio teaching practice. At the research level, scholars developed arguments, methods, and technologies to meet the challenges of rising interest in the VDS (Andia, 2001; Caneparo, 2007; Saghafi et al., 2012). The VDS brought about fundamental changes to studio instruction before the pandemic condition: in addition to teaching design skills, it also offered students an opportunity to learn across the previous boundaries of cultures and geography (Kvan, 2001). Differences between the physical studios and the VDS were observed in terms of: (1) the way in which reviews of design are undertaken; (2) the jury process performed to assess student performance; (3) collaboration aspects; and (4) the learning resources needed.

4.3 Constituents of the Social Construction Model

Three further pedagogies can be discoursed as part of articulating the evolutionary process of design pedagogy. While these originated in the late 1960s, after fluctuating interest over a period of three decades they eventually flourished during 2010s. These are: (1) *community-based design pedagogy* (Sanoff, 2003; 2007; Curry, 2004; Hou, 2007; Morrow, 2007); (2) *design-build and the pedagogy of making* (Oppenheimer, 2001; Wallis et al., 2002; Hinson, 2007; Verderber et al., 2011; Sturgeon & Grichting, 2014; ACSA 2021-a); and (3) *live project pedagogy* (Dodd et al., 2012; Brown, 2012; Harris & Widder, 2014). A review of these three pedagogies reveals some significant similarities, and a few differences. For example, while community design pedagogy places emphasis on decision-making as well as enhancing political and negotiation skills, design-build pedagogy relied heavily on teamwork, team building and construction in order to provide students with opportunities to develop practical vocational skills. Live project pedagogy, however, seems to capture the essence of both and thus appears to be a synthesis of the first two pedagogies (Figure 4). Notably, these three types of pedagogies shared similar emphasis on teamwork as exemplified by collaborative processes, collective design creativity, and experiences that extend beyond the limits of the studio learning setting.

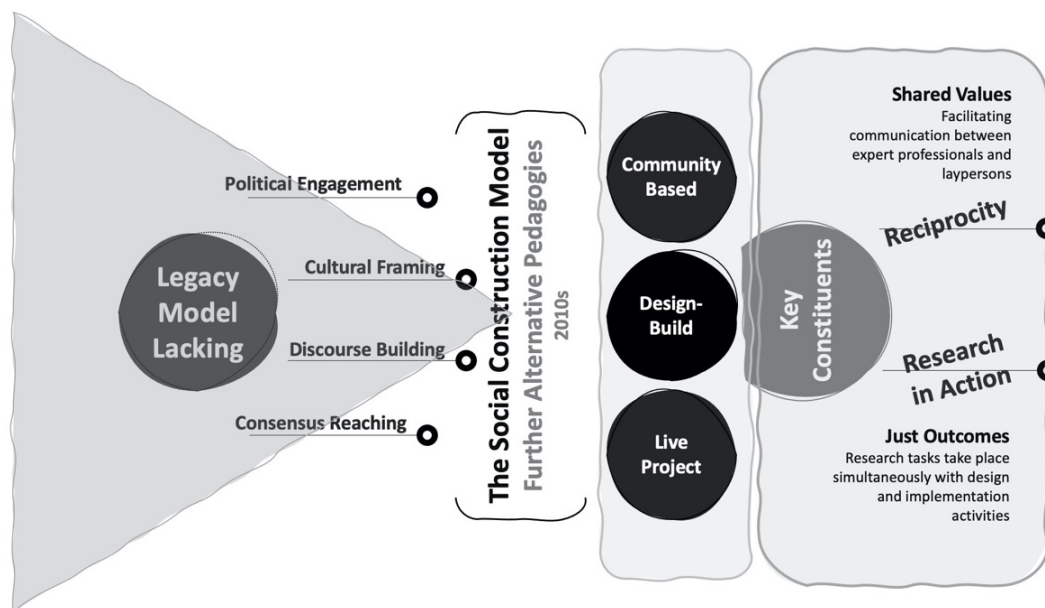


Figure 4: Social Construction in Studio Pedagogy, the 2010s

Collectively, these three pedagogies adopted and adapted situations and tasks, to create an appropriate *Social Construction Model*. This exploration and development of new and alternative approaches, allowed for experimentation both in and beyond studio settings. In principle, the development of these new pedagogical models offered students ample opportunity for experimentation with design processes and exploration of the design contextual variables. This experimentation promoted a culture of relevant scholarship, a culture of innovation, a culture of discovery and accidental innovation. Furthermore, it inculcated a sense of independence in design decision-making, a sense of ownership and, finally, a sense of applicability to real world problems.

Variations of these three pedagogies afforded the development of a Social Construction Model, in which the studio instructor facilitated and enabled, rather than dictated and mandated the studio program and process. With less emphasis on the instructor's goals and more focus on realising the student's own goals and/or the client and community goals, innovation and discovery occurred more spontaneously, and thus the accidental and unpredictable were supported to take place. Through this pedagogy which encompassed community involvement through reviews or collective decision-making, social construction was of great relevance. Yet, this approach was contrary to the mainstream legacy model, which adopted an approach lacking in political crafting, cultural framing, discourse building or consensus reaching. In essence, these three pedagogies enabled both students and communities to craft their own political reality, which in turn instigated a sense of autonomy and ownership among students.

In a Social Construction Model, one important constituent was to embed *Reciprocity* in the design studio, to facilitate students and community groups to switch roles. Another technique, role-play, has been widely used in both architectural design and planning courses as well as group activity projects, with participants from multiracial and intergenerational age groups, diverse social classes, and multiple disciplines (Wallis et al., 2002; Sanoff, 2003; Hou, 2007; Osborne et al., 2015). In the design studio reciprocity role-play, students presented their findings to studio clients and vice-versa, in a shared critique intended to counter biases and enhance mutual understanding. Reciprocity can be applied to students and guest reviewers as well. For example, students might play the role of a layperson or a client, while guest reviewers play the traditional role of experts. Experts and laypersons have different perceptions of, preferences for, and levels of understanding, of the production of a built environment. This was significant learning opportunity for all participants, because difficulty in communication between expert professionals and laypersons, is a serious barrier to successful collaboration. Furthermore, it also built confidence and encouraged all stakeholders to broaden their perspectives and acknowledge that they need one another to ensure project success.

Research-in-action is a second constituent that allowed research tasks (such as information gathering), to take place simultaneously with design and implementation activities, such as conceiving and developing a design solution in response to a need (Schön, 1984). The Research-in-action approach is based on 'action research' (AR) or 'participatory action research.' Such an approach has been promoted in anthropology, planning, sociology, and other related fields, who argue that AR promotes broader participation in the research process and supports actions that lead to a more just or satisfying outcome for stakeholders and students.

When practicing Research-in-action, project participants conduct 'design hypothesis testing' and repeat it through an iterative process. This process provides students with an opportunity to create a design and immediately afterwards, to then test a corresponding design hypothesis. A goal of Research-in-action is to generate quick feedback on a design hypothesis, utilising research methods such as surveys and/or interviews, with prospective or hypothetical building users, and therefore helping students to make improved, informed design decisions. Research-in-action, therefore, allowed studio participants to quickly identify the needs of clients and then respond with rapid action, providing a greater sense of control of the design process, decisions and thus learning. In summary, the constituents of Social Construction in design pedagogy, exemplified by Reciprocity through role-play, and Research-in-action, demonstrate the capacity to advance community design, design-build and live project pedagogies.

5. The Covid-19 Condition and the 'Transitional Emergency Model'

While the Legacy Model has been historically contested by critical and transformative models since the 1960s, having to make significant and immediate decisions to desert face-to-face learning in response to the Covid-19 condition in 2020, was drastically challenging. This was exacerbated by an urgent requirement to switch from the physical (onground) to the virtual (online), while augmenting capacity and quality. Such radical changes fundamentally altered the core of the legacy model in terms of process, modes of communication, and the nature of content.

5.1 A Challenged but Optimistic Transitional Emergency Model

Cautiously but optimistically, architecture schools worldwide are currently exploring possibilities to expand from an original aim to graduate students who can meet the needs of the profession, to a broader practice that empowers graduates to create opportunities for themselves through engaging with prospects and online resources. Embedding self-learning and offering multiple learning opportunities, fosters students' capabilities to shift from passive listeners to active learners, and from knowledge consumers to knowledge producers. While this notion is challenging in both face-to-face and virtual learning environments, the prospect is promising where every program, course, module, or studio project, provides an opportunity for reproduction and reinvention.

The response during the early stages of the pandemic demonstrated innovative practices and experiences, that proved valid and manifest themselves in students' work, through online exhibitions equitable to the standards witnessed for many years in presential exhibitions (Salama, 2020b; Salama & Crosbie, 2020). This does not provide evidence that online architectural learning would fully replace the pre Covid-19 legacy model or the alternative pedagogies and their variations. However, based on preliminary observations it is reasonable to assert that the emergency model of design pedagogy was, to a great extent, manageable but challenging, positive but stressful, rewarding but at times frustrating and exhausting to both students and their instructors (Figure 5).

The 'Transitional Emergency Model' of studio pedagogy is evident when reviewing the mechanisms adopted by schools in 2020, to react to the pandemic demands placed on learning and teaching methods. Some of these mechanisms include:

- Operating entirely through either formal Learning Management Systems (LMSs) like Blackboard Collaborate, and/or cloud-based video conferencing services like Zoom or MS Teams: students were kept motivated, occupied, focused, connected and supported in small groups, through online tutorials and studios.
- Utilising freely available online platforms like Google hangouts and jam-boards, Miro whiteboard and visual collaboration tools, and Padlet wall layouts: students and their instructors, whether collocated, distributed or fully remote, could engage in intuitive, in-person, real-time collaboration experiences.
- Providing teaching staff with urgent, additional IT support (software and equipment), including the provision of iPads with an electronic pencil, document cameras, phone/tablet tripods, headsets, and/or webcams for video conferencing.
- Enhancing assessment procedures by simplifying evaluation criteria, developing standardised rubrics for evaluating students' performance, changing and/or reducing project scope, being flexible with submission formats and/or deadlines, and a commitment to not record fail grades in students' academic transcripts.
- Offering continuity of cultural and community activities for both students and their instructors: through online forums, debates webinars, and even recreational activities, including cooking classes, music and yoga or mindfulness sessions.

While the preceding mechanisms are not exclusive, they are representative of the most common. Some schools developed practices beyond these, through hybrid forms of dual engagement that integrated physical and virtual delivery simultaneously, depending on restriction protocols after lockdown measures were eased. Professional and architectural school stakeholder organisations have endeavoured to spread both practical and positive messages, with a specific focus on students' health and wellbeing (ACSA, 2021-b; AASA, 2021; RIBA, 2021). Focusing on the long-term view of the profession, benefits of online learning in architecture and aspects of online collaboration and collegiality, have all been and continue to be, emphasised in these messages.

5.2 Persisting Challenges and Recent Developments

The 'Transitional Emergency Model' does not represent a favourable image of what the future might be, rather, it demonstrates various adaptation and mitigation strategies which were implemented in haste, to manage an unprecedented situation in the education of future architects and urbanists. There have also been severe challenges which were emphasised by academics and professionals in various reports,

workshops and online gatherings (Delpont et al., 2020; Grover & Wright, 2020; Delpont et al., 2021; Megahed and Hassan, 2021; Morkel et al., 2021a; Myers & Bratishenko, 2021; Olweny et al., 2021). Some of these challenges include:

- Having access to high end graphics computers and paywalled software, since much of this is unaffordable to students and thus only available on campus.
- Many students also struggled with access to reliable, continuous, and high-speed internet access.
- International architecture students (who returned to their home countries and are continuing to study remotely and online) faced additional difficulties of online limitations, including access to appropriate technology, software and some online collaboration platforms and social media portals.
- Many financially vulnerable students, and particularly those situated in the Global South, faced even more challenges, due to severe lack of digital resources, inappropriate online infrastructure, and in some cases, even unreliable or limited access to electricity.
- In some contexts (such as Canadian and UK Universities), the year-out placements or internships, co-op programs and training were severely challenged. Schools had to respond by urgently re-arranging these programs to accommodate the pandemic restrictions and are now having to reconceive their programs, in their entirety.
- Instructors were required to reconsider how they managed diversity, equity, and inclusion, in online and blended environments, and in particular, to rethink the design review, feedback and assessment practices, through an inclusive framework.
- Concerning reports of plummeting mental health required instructors to constantly refine and modify their teaching approaches, to focus more on offering authentic, connected co-learning and co-teaching, albeit through screen-based digital environments.
- When people were working from home during lockdown periods, these home spatial environments had an impact too. Many were having to juggle access to not only a shared family computer, but also a space where they could privately retreat. With homes full of family or share-houses filled with friends, navigating these distractions and privacy concerns, provided new challenges.
- Some of these difficulties were not just limited to students and their instructors, but also to professional architects who contribute to teaching on a fractional appointment basis. Their home settings and confidence in teaching with digital tools, did not necessarily support their teaching engagement.

A study in the context of the UK (Grover & Wright, 2020) was conducted based on an attitude survey and aimed at gathering the views of both design studio instructors and students, on the impact of Covid-19 condition. Representing 25 universities, nearly 800 students and a substantial number of teaching staff responded to the survey. The results of the study juxtapose features of the Legacy Model and the online Transitional Emergency Model as perceived by students and demonstrate important results with significant implications. A selection of the key findings includes:

- Overall learning satisfaction fell by 58% following the move to remote learning (when compared to traditional face-to-face learning).
- Merely 7% of students and 4% of academics preferred remote delivery over face-to-face teaching.
- Peer learning and peer support were most adversely affected by the closure of the physical design studios.
- All aspects of studio culture surveyed were significantly negatively impacted. Students' sense of being part of a community, interacting with other year groups, and motivation support from others, were especially impaired.
- Most students highlighted the essential social and connected nature of education facilitated by the physical environment of the studio and recognised it as crucial to their learning.
- The negative impacts on mental health brought about through isolation and lack of peer support were heavily stressed.
- Working remotely highlighted the disparity in the resources and skills required, for delivering a professional curriculum remotely.

While these results are context-based and cannot be generalised to apply to architectural education globally, they do provide a platform for conceiving future post-pandemic design studio pedagogy. Using the same parameters, implementation of contextually adjusted variations of this study in other global contexts, would provide useful data; to envisage a context-specific future that empathises with the particularities of the school, its resources, and its people, while allowing for comparison and benchmarking across the boundaries of geography and cultures.

A review of a small sample of other studies more globally, provides some additional insights, which follow. A study examined the views and diaries of international students studying in the United States, who encountered a difficult choice: quarantine in the US with the uncertainty of an ever-shifting immigration system and away from family and friends, or confinement at home with no guarantee of return. The study unveiled issues of identity, access, spatiality, and the difficulties that budding designers are struggling to cope with (Myers & Bratishenko, 2021). In articulating current worldwide efforts, several recent studies which demonstrate various approaches of the Transitional Emergency Model should be noted. In the context of Australia, Soccio et al. (2021) provide a model for the pre- and post-Covid university through, a student-centred pedagogical approach. In Jordan Alnusairat et al. (2021) examine students' satisfaction and perceptions of the studio delivery during Covid-19, by looking at the value which first year students give to hand drawing, model making and presential studio teaching, when compared to fourth year students. In Turkey, Ceylan et al. (2021) address the unique social-spatial aspects of pedagogy by using a qualitative approach to evaluate first-, second-, third- and fourth-year students of architectural design studios during the Covid-19 learning environment. In India, Varma & Jafri (2021) provide an educator's insight in addressing the vexed acceleration of digital-online education particular to architecture. Finally, a network of global architecture academics (Morkel et al., 2021b) have articulated a new ecosystem-of-learning approach for architectural education, as a catalyst for change. They argue that to move online architectural education beyond emergency remote teaching requires a total reset of current thinking and practices and propose a complex network of six new pedagogical clusters, which highlight contributions towards responsive, resilient, and replicable architectural education approaches.

These efforts underscore the fact that the Transitional Emergency Model is significantly altering the Legacy Model and while these studies focused mainly on virtual delivery, blended or hybrid learning strategies appear to now be on the forefront of emerging discussions about the future of design pedagogy. Blended learning utilises traditional teaching practices and integrates synchronous and asynchronous technologies, to provide learners with a broader scope of learning opportunities (Figure 5).

6. Concluding Outlook: The Loss of the Stable State and the Scope of Opportunities for Future Design Studio Pedagogy

The critical analysis of the chronology of studio pedagogy in architecture and urbanism demonstrates the limitations of the Legacy Model, which become evident when compared to the strengths and pedagogical advantages of the Alternative Pedagogies, Critical Inquiry and Process-based Pedagogy and the Social Construction-based Pedagogies of Community Design, Design Build, and Live Projects. The advocacy for these alternatives suggests that there is a need to continue to promote alternative syllabus approaches, to remedy design studio shortcomings and ameliorate any weaknesses of the Legacy Model.

Furthermore, the analysis reveals that pedagogical practices that respond to the Covid-19 condition are an integral component of an evolutionary process. Thus, the Transitional Emergency Model represents a critical moment in the history of architectural and urban education. Addressing these challenges could result in changing a tradition that has continued for centuries. However, architectural and urban education cannot face the future by continuing to offer what has been inherited from the past, and which is largely founded on the European Enlightenment of the 18th Century and of the economic circumstances of the Industrial Revolution. While past experiences should continue to act as a base, the complete recognition of the loss of the stable state is a key starting point, when speculating the future (Salama & Crosbie, 2020). The associated opportunities for reshaping the future of architectural and urban education are countless; they need to be understood and advanced by academics, practitioners, universities and professional organisations.

Design studio teaching and learning remains at the heart of studio pedagogy and at the centre of the

question of the accelerated adoption of digital, online and distance technologies. The “inevitable” move from the physical to the virtual world calls for rethinking the learning process, modes of communication, and the nature of content. The requisite tools and knowledge required to assess online delivery, become essential when considering a new and better educational model. Teaching experience as well as student experience of the online campus must be kept in constant evaluation, modification, and betterment.

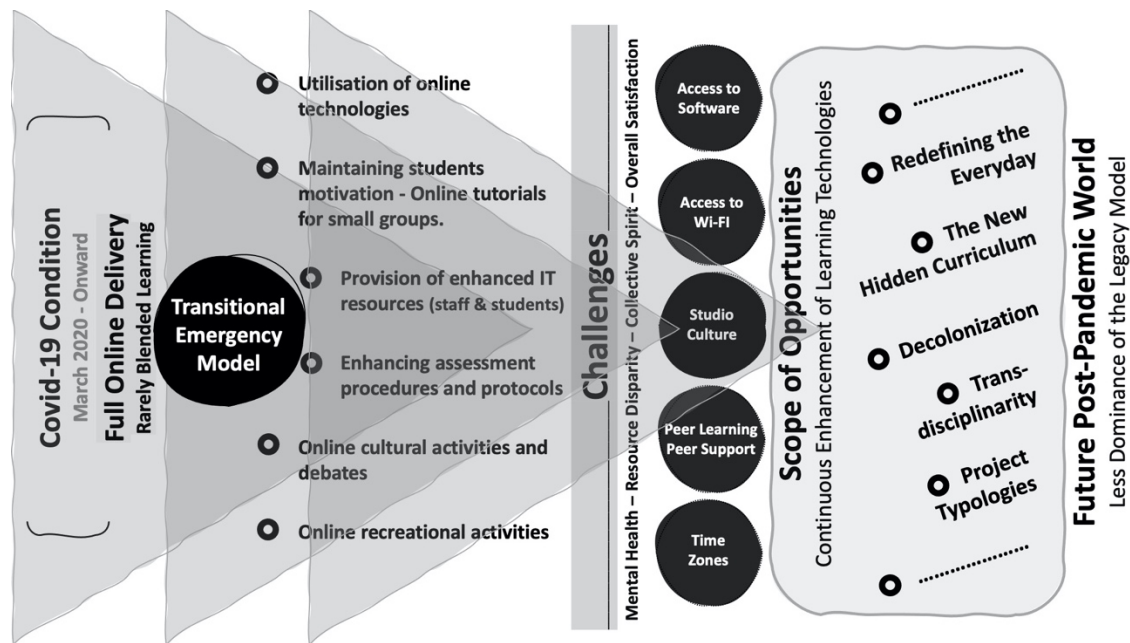


Figure 5: Covid-19 Condition – Challenges, Responses, and the Scope of Opportunities.

As it is not yet known whether design studio pedagogy will ever return to the Legacy Model or the ‘normal’ pre-pandemic conditions, it is evident that new forms of thinking are clearly on the rise. Characterised by short term and narrow views which are influenced also by considerations of economic realities, current discussions are centred on the ‘normal’ and the ‘new normal’. In these conversations, a stable condition represents the ‘familiar’, and the stable combined with what had been practiced in the past, is now transforming into the ‘new normal’ which represents an ‘unfamiliar’ or atypical condition (and which will eventually become stable, usual, or expected). This exemplifies the current delivery system of design pedagogy, which is operating within what is called ‘dynamic conservatism’ (fighting and reacting to change to stay the same). Ironically, this is not the case since the two centuries-old tradition of architectural and urban education has been continuously challenged, by emerging alternative pedagogies since the 1960s, as described in this paper. As evident in the Transitional Emergency Model, design pedagogy lost its stability when universities were instructed to abandon all face-to-face teaching, globally.

The notion of the loss of the stable state is not new. Indeed, it was emphasised by Schön (1971) 50 years ago, when he argued that we are living in a time in which stable views of occupations, religions, organisations, and value systems have been windswept. The Covid-19 condition has exacerbated this and generated further significant implications to the loss of the stable state in design pedagogy and the Legacy Model. The challenge for educators and decision makers in architecture and urbanism, is then to expect no stable state in the future, and that schools should become dynamic learning and adaptive systems that do not fight to stay the same or only react positively to change, but rather, who embed change, flexibility, and adaptation as part of their curriculum structure, design studio practices, and learning and teaching processes.

While the Transitional Emergency Model places emphasis primarily on an operational mode of thinking, the long-term view and the aspirational ambitious genius should now take place. This represents an urgent and thrusting emphasis on speculating **how studio pedagogy in architecture and urbanism** will be enacted in a post pandemic era. Nonetheless, the consequences and implications of the Covid-19 condition

represent a unique and positive opportunity to re-examine two of the negative rituals inherited from the Legacy Model, and the associated outdated tendencies that continue to characterise design pedagogy. The first of these is that, when teaching any body of knowledge, there is a tendency to present it as a body of facts and theories and as a process of criticism, and the processes supporting these outcomes are often vague. Knowledge is commonly presented to students retrospectively, an extensive exhibition of the performance of the work of an architect or designer over time. The second tendency is that many educators offer students hypothetical design projects where the reality of many contextual variables are neglected, and there is an unbalanced focus on offering clichéd interpretations about the built environment, rather than developing students' abilities to explore pragmatic issues that are associated with real life conditions.

Rethinking modes of learning from the everyday urban environment, and the focusing on person-environment interaction is another opportunity. If pandemics become annual events, with regular lockdown periods throughout the academic year, we will need to reconsider how students learn from the city or visit buildings to critique and learn from. This would require a redefinition of buildings and the built environment as educational objects, which include components and parts that require immersive experiences and need to be subjected to or situated within, a specific pedagogic orientation.

There has been a continuous and sustained focus on the content of knowledge and the 'explicit curriculum' announced to students. While this focus is primarily dictated by arduous accreditation standards, there is an opportunity to re-examine the "hidden curriculum," which refers to an appreciation of those unstated values, attitudes and norms that stem tacitly from the social relation of the learning setting and the content of work. Educators are currently operating in a new learning setting, and thus the new 'hidden curriculum' and the associated ethical practices, engagement protocols, accepted online communication 'norms', and addressing power imbalances, need to be reconsidered (Delpont et al., 2021). 'Punishment and reward' aspects inherited from the Legacy Model such as using tests, exams, and grades, need to be reenvisioned with a focus on authentic learning experiences and new forms of assessment and feedback.

Throughout the world, in any discussion about architectural education the starting point is always the Legacy Model and its variations. As previously explained, these were developed based on western canonic traditions and continue to dominate and thus overshadow and suppress opportunities for the recognition of historic, regional architectural and urban traditions, which have largely been overlooked or undervalued, within western knowledge frameworks. Digital tools provide new opportunities to engage with the global discourse on decolonisation, and specifically, to explore possibilities to decolonise curricula through expansion and by introducing a truly diverse body of knowledge that is not exclusively based the established Western canons of design studio teaching and Global North architectural biases (Gorman et al., 2021).

Trans-disciplinarity and transdisciplinary action are now gaining momentum in current pedagogical discourse (Liow, 2020). There is a growing interest in materialising these concepts where issues from other disciplines including environmental psychology, disaster psychology, public health, biophilic, salutogenic and eudemonic approaches to engagement with nature can be integral to design teaching practices. In parallel, this goes with the shift in emphasis from large scale building projects on greenfield sites, to the promotion of adaptive reuse (building adaptation, remodelling, and retrofitting) to accommodate environmental and sustainability considerations, and emerging working and living styles in a post-Covid-19 era.

In conclusion, through integrating blended learning strategies, the preceding scope of opportunities should be coupled with concrete efforts to improve: the utilisation of virtual environments in design pedagogy; the associated academic and professional contents; the delivery system; and teaching strategies and learning preferences. Examining the potential of these opportunities is no longer a luxury, but rather, a necessity and an obligation.

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