# The New Normal for Architecture Design Studio: Conceptualizing a Design Implementation Model

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Architectural design studios are the crux and core of architecture education. The closure of face-to-face Design studios due to the COVID-19 pandemic during the years 2020 and 2021 has indeed posed a set of challenges to architectural education. Through a rigorous set of research methods, the paper investigates the various possibilities and perspectives of making the challenges into opportunities to rethink, innovate and move on. The paper aims to develop a model for implementing studio-based learning innovative, appropriate, and conducive to covid and post-covid environments. The first objective dealt with in this paper is to find the consensus on the directives to solve and respond to the contemporary challenges of the pandemic for the SBL. The second is to arrive at a toolkit or a model that strategically summarizes the processes for the directives. The School of Architecture, Building, and Design from Taylor's University Malaysia has been the case study of the investigation. The research methods involved conducting focus group meetings with various stakeholders, such as the Students, Tutors, Studio Coordinators, Program Directors, and the Head of the School. The findings firstly offered a set of shifts in paradigms of SBL and secondly, a toolkit that we named as Design Implementation Model (DIM) for a hybrid studio pedagogy that we envisage and envision to be the future of architectural education.

*Keywords: Studio-Based Learning or the SBL, Architectural design studios, Design Pedagogy, Focus-group Meetings, Model*

## 1. INTRODUCTION

Design Studio is the crux and core to architecture education. The closure of design studios in March 2020 due to the Movement Control Order (MCO) during the COVID-19 pandemic in Malaysia posed many challenges for architecture education. Due to the MCO, there was a sudden transition from physical F2F studio-based learning to virtual/online studio learning. Ad-hoc reactive approaches took place, attempting to replicate the spatial dimension of the studio (which was a signature pedagogy of architecture) to a digital space. It relied on technologies where all teaching activities are conducted through MS Teams, Zoom, and collaboration design platforms such as Miro. Also, the studio experience and design tasks are shifted to digital spaces such as Moodle databases, google drive, etc.

In Malaysia, the Council for Accreditation of Architecture Education (MAPS) have issued special notes which provide compulsory instructions and guidance to Architecture Education Providers and Interior Design Education Providers (IDEP) during the post-movement Control Order (MCO) period in the context of teaching and learning (T&L) of Design Studio (Special Note 1: Section 3.0 Design Studio Pedagogy; Special Note 2: Section 5.0 Design Studio Pedagogy and ICT Facilities, for 18 March 2020); Special Note 4 on Teaching and Learning of Design Studio Post-MCO for Architecture and Interior Design Programme, effective beginning 1 July 2020) (LAM 2020a; LAM 2020b; LAM 2020c). MAPS noted the disparity in the availability of information and communications technology (ICT) infrastructure between different education providers and reinforces that online teaching as a replacement should be viewed as temporary. The dynamic studio learning environment could not be simulated through a virtual studio or any online medium.

Arising from face-to-face physical studio learning to online learning, the shift to online learning has been abrupt, with educators taking a reactive stance, limited planning, and lots of action learning along the way (Amiel, T., and Reeves, T. C., 2008; Dam, R. and Teo, S., 2019). The question arises, what would be an appropriate model for implementing design studio in the context of hybrid learning? The findings are significant as they lead to identifying the impact of current learning, enabling short-term interventions to be proposed; secondly, exploring opportunities for the future as the new normal will not be the same as pre-COVID 19 studio-based learning approaches. In the likelihood that social distancing measures will continue into 2021, these findings will provide information that may help schools of architecture develop appropriate responses in the post-COVID 19 environments.

The data collection tasks were divided into three parts to develop an implementation model from the online teaching experiences in 2020. The first part was an empirical study on educators' teaching perspectives. The second part was a student survey on the satisfaction and perception of online studio-based learning. The third and culmination were to conduct focus group meetings amongst design studio educators. The paper focuses on the findings from the third and culminating method, i.e., the focus group meetings. The results are analyzed to develop a model that can be implemented for the design studio for 2021. While the first and second parts of the project have been presented and published (in press), this study focuses on the third part, particularly the focus group study developing a model for studio learning in post-covid environments.

## 2. LITERATURE REVIEW

### *2.1 Student and Lecturer's Survey of Online Design Studio Teaching*

There has been a limited empirical study on the school and teacher's perspective on design studio teaching. Specifically, the University of Bath led by Grover & Wright (2020), sponsored and supported by the Standing Conference of Heads of Schools of Architecture (SCHOSA), conducted a comprehensive survey on the effects of COVID-19 on architecture studio teaching in the UK on both impacts of online learning to student and teachers by drawing comparisons between online and face-to-face education. This provides a unique opportunity to enhance both remote and face-to-face learning through a comparative understanding of the successes of each mode of delivery (Hart, R.,2016; Shukri, S. M., Wahab, M. H., & Jamala, N., 2021).

Its initial findings, published on 20 July 2020, showed a detrimental impact of online learning. Seven hundred ninety-eight students from 25

universities responded to the survey. The findings were:

- Overall satisfaction with learning fell by 58% following remote teaching.
- Only 7% of students preferred remote delivery to face-to-face teaching.
- Every factor questioned was negatively affected by the move to online teaching.
- Peer learning and peer support were most negatively affected by the closure of the design studios.
- All aspects of studio life surveyed were significantly negatively impacted. Students' sense of being part of a community, interacting with other year groups, and motivation support from others were greatly affected.
- Students highlighted the social nature of architectural education facilitated by the design studio and recognized it as necessary for their learning.
- The impacts on mental health through isolation and lack of peer support were emphasized.
- Working remotely highlighted the disparity in resources available to students necessary for delivering an architectural curriculum remotely.

One hundred twenty-one tutors also responded to the survey from 29 universities. While 58% of tutors were satisfied with their online teaching experience, this fell from 94% satisfaction of in-person delivery. Only 4% of tutors preferred online delivery to its face-to-face equivalent. The results are summarized as follows:

- Overall satisfaction with learning fell by 35% following remote teaching.
- Only 4% of tutors preferred remote delivery to face-to-face teaching.
- Most factors questioned were considered to have been negatively affected by the move to online teaching.
- Students' ability to learn from each other and share resources were most negatively affected by the closure of the design studios.
- The move to online teaching significantly negatively impacted all aspects of studio life surveyed. Tutors considered shared social activities between students to have been most changed considerably.
- The limitations of technology, developing a sense of studio culture, building equal relationships with students, and the fatigue of online tutoring was highlighted as critical challenges for tutors.
- Several tutors cited improved lifestyles, including reduced commutes, as positive impacts. Others found the move to remote tutorials aided their organization and their ability to share resources and ideas.
- Moving to online teaching positively impacted acoustics and noise control, student punctuality, and time in tutorials.

### *2.2 Long Term Impact of the Pandemic on Architecture Education*

In America, a three-part installment on COVID-19 specific Deans List update was conducted by Archinet (2020a; 2020b; 2020c), where several long-term impacts of the pandemic on architecture education were shared. The voices of the Deans suggest the following:

Learning space: Despite integrating new tools and techniques informed by technology, the studio remained a significant learning environment. When design studios are delivered online, it is essential to recognize the disparities in space and technology affordances amongst students (Salleh, R., Memon, M. and Md Yusoff, M.,2016).

Teaching and Learning: There has been an increasing need to be adaptable and flexible, leading to an emerging market to re-think curriculums, formats, modalities, sizes of cohorts, travel experiences, and flexibility in grappling with such unexpected situations (Pallasmaa, J., Mallgrave, H., Robinson, S. and Gallese, V., 2015).

Pedagogical shifts: The current pandemic propels the need to re-consider what architecture can and should address, shifting the focus from empty formalism to take on briefs that make a difference and impact to the built environment and its inhabitants: How do we train a new generation of designers and practitioners to be more encompassing of anticipated conditions or larger spheres of concern, such as a pandemic, or those emanating from our larger spheres of problem like climate change?

Hybridized format: Besides these pedagogical shifts, forms of education could also well be transformed in the foreseeable future into a hybrid formulation of its delivery (Aminuddin, A. M. R.,

& Yong, G. K., 2009; Hashim, M. Z., Awaluddin, Z. L., Aminuddin, A. M. R., Sarkum, S. A., Sholiha, A. B., & Aziz, A. A.,2021). There was a coherent voice suggesting thoughtful online practices as an alternative to expand rather than limit education techniques. The reduced resistance to online teaching offers acceptance to more open and challenging relations between teacher-student, moving away from current studios that are heavily informed by the Beaux-Arts, 19th-century design studio with the addition of screens (Amiel, T., and Reeves, T. C.,2008). That kind of freedom to craft different educational scenarios for simultaneous on- and off-campus learning experiences will give universities new opportunities that might very well impact building and campus design needs down the line supporting greater efficiencies leading to more economical education for students.

### *2.3 Delivery of Online Design Studio*

Transition from Face-to-Face to Online Studio Teaching: Specifically, within the context of teaching and learning, scholarly papers were written from studio delivery, i.e., how to move from face-to-face to online learning. Besides the educators' survey and responses from the academic leaderships, some educators have shared strategies on how to create a long-term plan for online studio design instruction. For example, De Jeus shared some practical tips to schools and students around the globe based on our experience with online design studio teaching in our Master's program at Tsinghua University's School of Architecture (Sezer, S., Erbil, Y., and Murat, D., 2016; De Jeus, 2020). Rebek (2020) shared a hybrid model through a set of strategies used at Columbia GSAPP during the shift from physical to online learning. These included the flipped classroom, the 24-hour virtual studio, i.e., a permanently open "room" where students or faculty can log on and see who is around and have an informal chat, setting expectations on synchronous and asynchronous communication, 3D scanning to mediate between physical and virtual environments, allowing students to scan architectural models, settings, or even urban conditions, VR is inherently immersive and therefore uniquely suited to architectural representation.

In the School of Design, the University of Melbourne, a DIAgram – a relational framework for teaching online – was developed by A/Prof Kate Tregloan, Dr. James Thompson, Dr. Pippa Soccio, and Huiseung Song with the Built Environments Learning + Teaching (BEL+T) group (Distance Design Education, 2020). Also, an online guide was developed to facilitate the transition. The DIAgram puts Learning Engagement and the sense of Belonging at heart. These foundational aims guided our daily discussions by reminding us and others that 'what we are designing is not a product: it is the experience of that product and how that engages learning' (Jones, 2020, p. 11). Around this is the outer layer, Delivery + Interaction + Assessment, an interrelated framework rather than independent parts that helped to extend early lessons and developing practices as we prepared for an anticipated (second) online semester. The Organised is the enabler to coordinate and curate meaningful learning experiences for students. In a nutshell, the ultimate objective of a teacher's organizational efforts is to enable Learning Engagement and a sense of Belonging through the practical interrelation of Delivery + Interaction + Assessment activities.

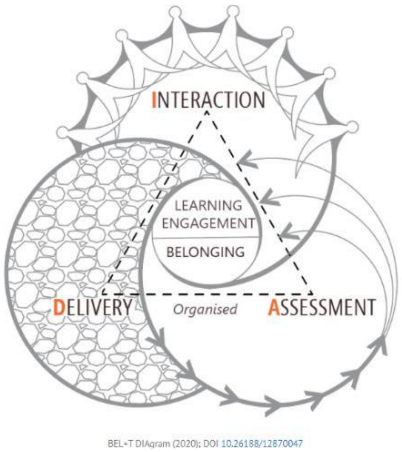


**Figure 1**: BEL+T DIAgram (parts) (2020); DOI 10.26188/12870047

At Harvard University ("Coronavirus Main," 2020), the categorization, according to various activities such as teaching, learning, research, work, and socializing remotely, has been given the main focus. At the same time, ETH Zurich ("Solutions for different teaching scenarios," 2020) establishes a categorization according to 7 scenarios of teaching. The articulation of ways to manage the challenge has been the notion of transparency of internal processes such as lectures, interims, and final external reviews through Miro's collaborative platform. University

College of London, in the Year Book ("Bartlett Summer 2020", 2020), has elaborately mentioned the various pedagogical methods employed in each of the studios from undergrad to postgrad, through problem-based learning and collaborative learning.

Based on the current teaching transition from face-to-face to online, the overall tone of the current situation and studies around it suggests three significant domains. Firstly, the inevitable needs and opportunities for pedagogical shifts and approaches by using online learning as an alternative to support in-person or face-to-face learning. It is recognized that such shifts have their challenges and opportunities (Shukri, S. M., Wahab, M. H., Awaluddin, Z. L., Aminuddin, A. M. R., & Hasan, M. I., 2022).
Secondly, the crux of students' learning lies in the learning engagement, i.e., how students engage with the teaching and learning objects from cognitive, affective, and behavioral engagements. Thirdly, there is a coherent voice suggesting increasing acceptance of online learning in that there are potentials to create hybrid models as future to architecture education.

### *2.4 The Case of Taylor's University*

All programs at Taylor's University utilized blended learning and has incorporated online learning as part of the modules delivered before the COVID-19 pandemic. Thus, the academic team is equipped with essential skills in online delivery. The Centre also conducted intensive webinars for Future Learning to facilitate the transition from face-to-face to online learning during this state of crisis.

Adhering to the Ministry of Higher Education and MAPS instructions, the architecture programs have been implemented using different sets of formats from March to October 2020 following the development of the COVID-19. In the School of Architecture, Building, and Design at Taylor's University, before COVID-19, design studios are held face-to-face twice a week, with a 5-hour studio per session. During the March semester, with the Movement Control Order (MCO), the delivery of the design studio transitioned from face-to-face to 100% online, with minor revisions to the assessment studio briefs. This was done in a fast-paced and rapid response to the crisis. While, in the August semester, when the nation was under Recovery Movement Control Order (RMCO), studio delivery was two-fold, adhering to the Special Note 4 by MAPS (LAM, 2020c). Firstly, for Semesters two to five, studio sessions were alternated between online and face-to-face (50-50%). Secondly, for Semesters One and Six, studios were conducted face-to-face. In all cases, studio lectures were delivered online.

Upon the end of 2020, in reflection, the studio learning leadership team mooted a Re-thinking studio-based learning project to develop a way forward in the new normal of post-pandemic of studio learning. As part of this, the project was divided into several phases, including interviews with the studio academic team; a survey on students' satisfaction of physical versus online studio learning; focus groups with the studio academic team to develop an implementation model for blended teaching and to learn for short-term and long-term studio-based learning delivery. This paper focuses on the focus group with the studio academic, leading to an implementation model.

## 3. METHODOLOGY

This study applied the grounded theory approach in developing the design implementation model. The notion of grounded theory is needed as the pandemic has impacted the studios unprecedentedly. Therefore, a demand for a qualitative study is realized and implemented.

Firstly, this study collected data via a focus group comprising the studio module leaders and tutors, program directors, and head of the school. There were, in total, three focus group meetings conducted for under-grad (or Part I), post-grad (or Part II), and the first year of undergrad. The findings from the focus group meetings were presented and tested for critical feedback sessions and final alignments. This presentation was targeted to all three focus groups simultaneously to culminate. There were 15 Challenges discussed at each of the focus group meetings as mentioned below:

Q1: How do you want to organize your studio?

Q2: What matters the most to your School?

Q3: How do you want to empower your studios for the 15 Challenges due to the Pandemic:
1. Time management
2. Facilities for interaction

3. Visual quality of presentations and during the tutorials

4. 3D Models or Modelling

5. Collaborations

6. Flexibility

7. Replication of physical session into online, being counter-productive

8. Interface/internet quality

9. Peer leaning

10. Personalisation

11. Social distancing, the relevant SOP, health, and safety

12. Learning experience for the first year

13. Stressed-out students

14. Sense of community

15. Employability after graduation for the final year

Subsequently, the results of the focus group and the earlier empirical studies on student questionnaire surveys and educators' teaching perspectives conducted by the researchers before this study, a model for studio-based learning was developed.

## 4. RESULT AND DISCUSSION

### *4.1 The Five Pillars of "Experiences": Emotional, Social, Intellectual, Ethical and Virtual Experiences*

Based on the focus group, it is found that learning in the design studio is a process in which experience is key to the architecture and design community. The research findings identify design studio as a place for students to (1) learn and acquire the knowledge and skills acquired in other courses, (2) open their eyes and be exposed to new platforms, ideas, problems, and solutions; and (3) learn to negotiate their design ideas with collaborators, instructors, and reviewers.

The five components that the notion of "experience" is related to are: Emotional, Social, Intellectual, Ethical, and Virtual experiences. These five components emerged the cognitive, affective, and behavioural learning engagement significant to students. There is a suggestive difference between the intensity of different experiences across the different year levels. It is also interesting that such experiences are never linear but effectively elucidate their relationship. The experiences envisioned as empowerment in the first-year studies (Figure 2) mainly occupy the suggestions to face the challenges on social and emotional types of experiences. While virtual becomes the default due to the pandemic, the key to success in the first year is about the interaction between the students, peers, and lecturers elucidated for the intellectual experiences. The experiences envisioned as empowerment in the second and third years of studies (Figure 3) mainly occupy the suggestions to face the challenges on ethical and intellectual types of experiences. While virtual becomes the default due to the pandemic, it has to be noted that the key to success in the second and third years is about being responsive to one-self, peers, and academia elucidated through the emotional and social experiences. The experiences envisioned as empowerment in the post-grad program (the fourth and fifth third years) (Figure 4) mainly occupy the suggestions to face the challenges on all the five experiences. It has to be noted that the key to success in the post-grad program (the fourth and fifth third years) is about being holistically elucidated with a spectrum of experiences focusing on each of them.

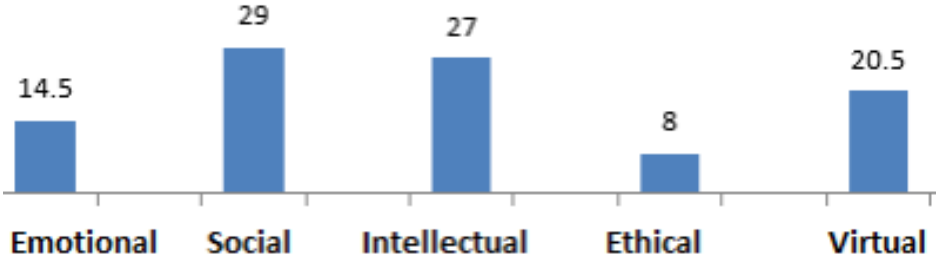


**Figure 2**: Overall Distribution of Experiences in Year 1

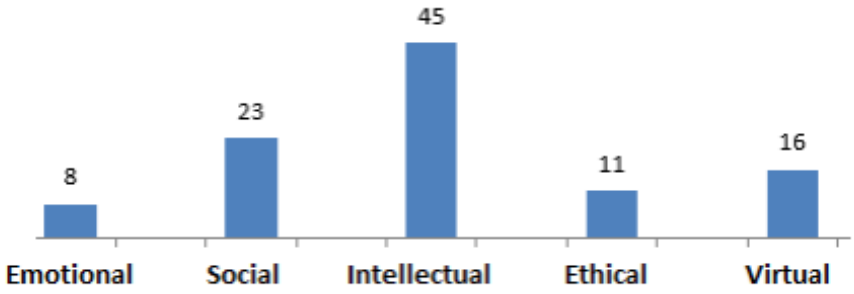


**Figure 3**: Overall Distribution of Experiences in Years 2 & 3

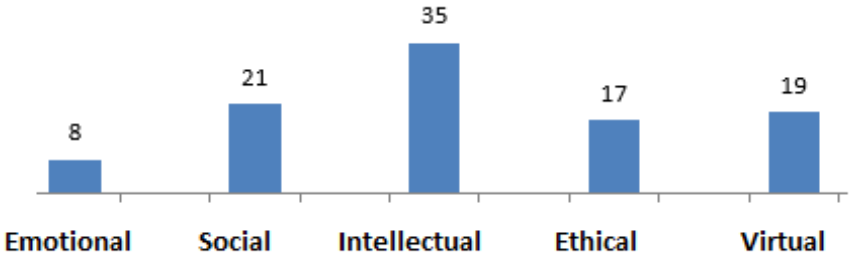


**Figure 4**: Overall Distribution of Experiences in Masters (or Years 4 & 5)

### *4.2 Sense of Community and Peer Support*

The importance of community and peer support has been magnified due to the increasing thinning out of "studio culture" when learning shifted online. The findings from the student survey conducted earlier pointed to peer learning, being a key determinant of studio culture, being the most negatively affected. And the demise of studio culture has been a consistent issue arising across different architecture schools.

The findings alluded to the importance of a sense of community and peer support when the screen confined design studio learning. Building on the BEL+T DIAgram of the University of Melbourne, which has aspects of Delivery + Interaction + Assessment as three primary directives, the findings alluded to a significant component to be included, "Vitalisation."

Vitalisation refers to learning activities "outside" of but somewhat related to the studio module that impacts their learning engagement. In other words, vitalization is offered at the school or university at the national or international levels in two folds, namely to outward and inward. The outward fold provides a more comprehensive platform for knowledge transfer, and the inward fold is to offer training to staff members. While these activities and events may be prevalent during the typical face-to-face learning, they have been placed in the background overshadowed by the technicalities and the shifting learning culture from face-to-face to online learning. The inclusion of activities and events such as seminar series, virtual exhibitions, conferences into the pedagogy of a design studio has been one of the significant shifts due to the pandemic. The school's direction for the architectural voice and focus and relevant training offered to the staff members in the faculty of architecture are all on the way to providing the students' learning experiences directly and indirectly.

### *4.3 Sense of Community and Peer Support*

The three PROCESSES are categorized into three directives: delivery, interaction, and assessment – the DIA model, including Vitalisation (V). These four directives are significant aspects of students' learning.

Besides the conception of the model, year-specific frameworks in the form of a Table have been developed to facilitate the design of weekly activities in the semester. The Table was a compilation of techniques that could be employed for each of the processes within the directives.
A framework for a process of an architectural design studio with multiple complexity levels focusing on the following is proposed:

1. Interactive model for the first year – interaction with peers, seniors, collaborators, context, and lecturers.

2. Responsive model for the second and third years – responsible to context, inquiry, ethics, peers, and juniors

3. Holistic model for the Masters – the balance between theory, research, and practice.

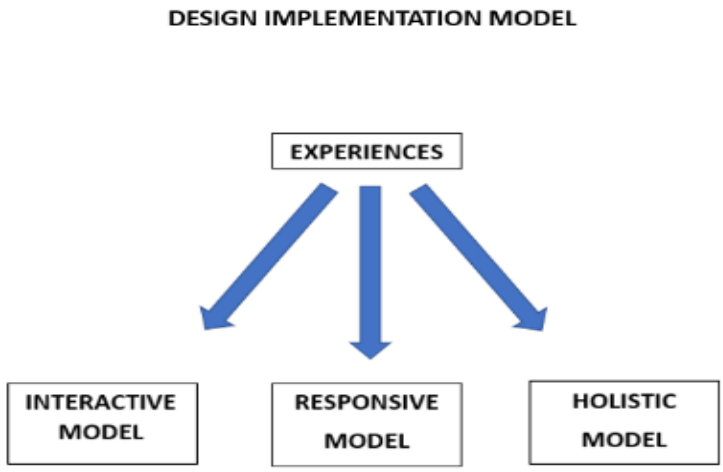


**Figure 5**: The Three Focusses of the Design Implementation Model

The model facilitates the design of the module delivery for studios, particularly for choosing learning experiences for the respective studio's weekly targets. It gives a start point to implement the experience through Delivery, Interaction, Assessment, and Vitalization (DIAV) tools. The model also gives four (4) choices (represented by four colors) of the hybrid version - fully f2f, entirely online, concurrently f2f/online, and non-concurrently f2f/online. The DIM Overall Model with DIAV, Experiences, and Hybrid distribution is visualized below. The radial segments are experiences; the concentric circles/rings (inner to yellow) are the 12 processes for DIAV; the concentric circles/rings (outside to yellow) are the models; and finally, the colors DIAV are about hybrid as per the legend.

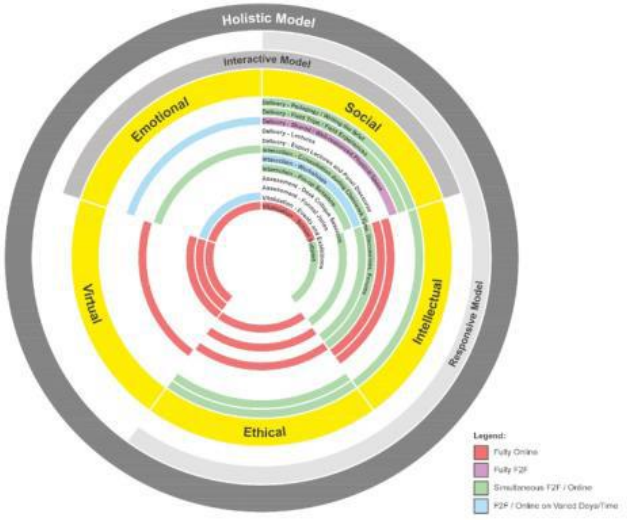


**Figure 6**: Design Implementation Model (DIM)

In the model above, the concentric lines until the yellow ring from the center are the four directives: Delivery, Interaction, Assessment, and Vitalisation (the DIAV). The yellow ring demarks the five experiences that are radial segments in the circles. The selective models for each level are highlighted from the yellow ring to the periphery. The colors in each concentric ring refer to either online or face-to-face mode of delivery. The experiential components of Delivery + Interaction + Assessment + Vitalisation are described (Figures 2 to 4).

From the discussions in the previous sections, it can be summarized here that there are key experiences at each level of architectural education in the school. These levels are indicated by the data collected as the first year, second and third years, and Masters or the fourth and fifth years of Part I & II of architectural studies. First-year model: interaction is the key focusing on emotional and social experiences. The critical challenges sorted from the focus group meetings are peer learning, emotional well-being, and learning experience.

Second and third-year: Responsiveness is the key to focusing on intellectual, social, and ethical experiences. The critical challenges sorted from the focus group meetings are a sense of community, external collaboration, flexibility, visualization skills to the juniors, and employability after graduation.

Masters: Being holistic is the crucial balancing on all experiences such as emotional, social, intellectual, ethical, and virtual. The critical challenges sorted from the focus group meetings are holistic, pertinent to time, people, design and drawings, and physical and psychological health and well-being.

## 5. CONCLUSION

This study started to develop a model for implementing studio-based learning innovative, appropriate, and conducive to covid and post-covid environments. The first objective dealt with in this paper found that there were four directives to solve and respond to the contemporary challenges of the pandemic for the SBL. These were curriculum Delivery, student-staff Interaction, process and product Assessment, and internal and external Vitalization. The second objective arrived at a toolkit that we named a Design Implementation Model (DIM). To our surprise, presented an additional finding on a strategic way of organizing the directives based on experiences pertinent to the year-level in architectural education. The DIM also presented itself on the 12 processes for the directives and suggestions on the three modes: fully online, fully face-to-face, or hybrid. The Design Implementation Model (DIM) derived from the results of this study suggests a coherent model with a differentiated focus for diverse year groups. Applying the same to be tried and tested for the upcoming semesters would contribute new knowledge for practice and pedagogy and the new paradigm of the post/pandemic scenario.

### *Practical Applications*

Because of the multiple feedings and collective efforts by all the stakeholders such as students, teaching faculty, and management, the Design Implementation Model is reliable to apply to First Years, the entire Part I and Part II programs. The wealth of layers of information in the DIM, such as directives, processes, modes, and the models pertinent to experiences, offers a diversified richness to design SBL.

### *Limitations and future studies*

In 2021, to facilitate the delivery of Studio Based Learning (SBL) at Taylor's, the Design Implementation Model (DIM) has been performed and adopted by the various design studio modules. For a studio master/coordinator, the DIM is offered alongside many techniques within a directive, presented in a Table format as a year-level-based framework. The effectiveness of the DIM implementation will be measured via surveys.

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