

Tandem Bicycle Model (TBM): A pedagogical hybrid model for teaching and learning management in the post-pandemic era



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Abstract

The COVID-19 pandemic affected the education sector, forcing the implementation of synchronous and asynchronous modes as alternatives for on-site face-to-face teaching and learning modes. It was a rapid shift for academic institutes that did not have the necessary preparation process. Creative arts-dedicated universities, which comprise a larger proportion of practical components in their degree programmes, have been challenged under the 'new norms'. Former 'benchmarks' became problematic in the absence of technological pedagogical and content knowledge (TPACK) of teachers, distance mode-oriented subject contexts, required resources, evaluated educator and learners' needs, technological assistance, suitable learning environment, and necessary support. These essential requirements must be managed strategically as they are economically, politically, and behaviourally entwined. This research employs the inductive analysis of teaching and learning practices, including those at the University of the Visual and Performing Arts in Colombo during and after the COVID-19 pandemic, comparing them with the prominent theoretical models in hybrid teaching and learning. This article proposes a conceptual model for multimodal teaching and learning of educational journey: the Tandem Bicycle Model (TBM), which is positively function in an eco-system responding to seven thematic aspects.

Keywords

Education in post-COVID-19, Hybrid Teaching and Learning, Performing Arts Education, Tandem Bicycle Model, TPACK

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Introduction

The COVID-19 pandemic has affected everyday physical interactions and associated activities of global communities by forcing them to employ existing or innovative media communications without demand for close engagements. Academic institutes mostly depending on corporeal meetings were forced to seek different teaching and learning strategies. As the UNESCO estimation, more than 1.6 billion children and youth around the globe were affected, and some of them are still working towards recovering from their educational disruptions at least in 2030 (UNESCO, 2023). Despite the length of physical closure, some countries or academic institutes applied distance mode (remote mode) educational strategies to conduct teaching and learning aimed at positive outcomes (Masalimova, Khvatova, Chikileva, Zvyagintseva, Stepanova, & Melnik, 2022). Such teaching and learning mode could be effective when educational institutes have the advantages of prior practices with technological aids, availability of technical resources, implemented training and preparation planning for unparalleled circumstances.

Distance learning, hybrid learning, and blended learning have been practised in the higher educational systems for decades, even before the onset of the COVID-19 global pandemic. The spectrum of synchronous and asynchronous educational modes, as well as flexible learning have been offered by institutes for their own and other stakeholders' benefits. Synchronous mode allows students and educators to conduct teaching and learning with both onsite face-to-face interaction and remote learning or a combination of both, in virtual or physical modes in real time. Asynchronous teaching and learning have been expanded to a more flexible side, with learning referring to pre-setup learning materials available for learners to work and respond in an agreed longer time frame (Ally, 2011). However, modern technology-based distance learning is vulnerable to communities that still depend on traditional educational practices and are economically and technologically marginalised. In many cases, countries or educational systems that were economically advanced and technologically prepared, supported by surrounding communities, and teachers and learners who were technologically pedagogically knowledgeable were less interrupted compared to those without such advancement (Vincent-Lancrin, Cobo Román, Reimers, Madero, & Vargas, 2022).

In circumstances where in-person learning is adjourned, degree programs that focus more on practical application through kinesthetic learning are significantly impacted. As per Robin Nelson's model (2013) and theoretical discussion, praxis is theory imbricated with practice

which is centred by three forces: 1) ‘know-how’ – a tacit and embodied form of knowledge that the learner developed through the practice over time, ‘know-what’ – is the tacit made explicit through critical reflection, and ‘know-that’ – is ‘outsider’ knowledge and knowing of conceptual frameworks. In any kinaesthetic study, the know-how constitutes the demonstration aspect with embodied knowing that disciplines such as agriculture, medicine, and performing arts strongly require for competency. In addition, delivery and evaluation of teaching and learning practice must be conducted in a specific space and environment required according to that subject specificity. Educators must plan and be prepared to facilitate all three aspects of knowledge in praxis but not only for evaluating distance knowledge and knowing of theoretical frameworks. Effective teaching and learning practices aimed at praxis must incorporate various learning modes, content, pedagogical strategies, and suitable technological tools while also offering support to accommodate both learners and educators.

As per UNESCO, their suggestions can be considered as guidelines in educational management for any academic institutions: 1. System readiness- measuring the accessibility of people, infrastructure, resources, and capacity to recommence; 2) Continuity of learning - continuation after the interruption; and 3) System resilience: regaining the education system with reinforcement and foreseen to respond to recent and forthcoming crises (2020). With other recommendations, UNESCO also suggests providing delivery modalities such as distance education along with both online and offline approaches with sufficient training for teachers and learners as a preparation for any given circumstances (2020).

After five years of the ‘first wave’ of the pandemic, communities in the Higher Education Institutions (HEI) across the globe are not risk-free and willing to entirely return to in-class teaching and learning unlike before the pandemic. Some subject-specific educational streams encountered challenges due to the need for necessary resources and technological pedagogical content knowledge. Additionally, these fields often require communal engagement and team-based fieldwork, which further complicated the difficulties they faced. Moreover, those who were not equipped or had a contingency plan, including alternative media for effective communication and educational interactions without health risks, found themselves limited to a traditional mode of education. However, these issues must be evaluated through the lens of pedagogy per say for better pedagogical practices to face similar or more chaotic conditions in the future.

Study Objectives and Methodology

This research aims to study the pedagogical challenges encountered by the creative arts degree programs, mainly at the University of the Visual and Performing Arts (UVPA) Sri Lanka and strategies employed. In addition, this research aims to develop a conceptual model of hybrid practice in higher educational systems that can be applied in any given conditions. This qualitative research employs an inductive approach. The conceptual model emerges from an analysis of theoretical discussions surrounding online teaching and learning, juxtaposed with case-specific management strategies and phenomenological observations made by this researcher while facilitating degree programs at the University of Visual and Performing Arts during and after the COVID-19 pandemic.²

Sri Lankan and UVPA Scenario

Disruption of university teaching was not a novel situation for Sri Lankan State Universities from two perspectives due to preventing measures or objecting measures. Government decisions, union class actions of academics and non-academic staff, student protests, lack of facilities at the particular institute, and health-related issues most commonly caused such interruptions. Rarely do interruptions occur due to political uprisings, government censorship, or terrorist threats and attacks, such as the three-year closure during political unrest and violence in the late 1980s, as well as the Easter Day terrorist bomb attack in Sri Lanka on the 21st of April 2019. As evident in past scenarios, learning discontinuation could be constant for days to months and, in a rare circumstance, a year or longer. However, until COVID-19, situations involving interruption were not properly considered in implementing contingency plans for maintaining learning engagement via any communication other than the classroom setting.

During the first wave of COVID-19 in Sri Lanka, the universities were physically closed for almost 4 months. In April 2020, the University of Visual and Performing Arts, which has three faculties for undergraduate degree programs under visual arts, music, and dance and drama streams, was assigned to conduct student-free academic-related activities, such as curriculum revisions, to occupy the academic staff who are on the government payroll. Later, as per the

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advice of the University Grant Commission of Sri Lanka, a new order came to complete degree contents online (UGC, 2020).

Though solutions, such as Lanka Education and Research Network (LEARN)³ were introduced for synchronic learning in the higher education sector, resource users in Sri Lankan universities had challenges in employing the online platform for teaching and learning, particularly performing arts and other fieldwork-based degrees (Hayashi, Garcia, Maddawin, & Hewagamage, 2020). In addition, when conducting teaching and learning via online platforms raised issues for Sri Lankan state university student's poor internet connections (70%), stressful screen time (50%), difficulty in online assessments (34%) were the main challenges, faculties concern the difficulty in assessing students' performances (76%) followed by poor internet connection (68%), and poor engagement with students (64%) (Hayashi et al., 2020).

Under pressure from the government, the University Grant Commission decided to physically reopen the universities for students under strict guidelines for limited students. According to the UGC circular issued on 04 July 2020: 1) A faculty can have a maximum of two batches at a time, preferably, the fourth-year students and the third-year students; 2.) Allocation of hostel facilities to students should be strictly based on a single room per student. Further, the one-meter social distance rule should be maintained at all times in examination and lecture halls, the library, laboratories during practical classes, and any other academic activities

At this stage, productivity or positiveness measured by any former 'benchmarks' became problematic due to the absence of technological pedagogical training for teachers in content delivery and assessments, required resources and technological tools, a suitable learning environment, and support. These essential requirements must be managed strategically as they are economically, politically, and behaviourally entwined.

Lower hierarchical administrators had to construct productive performances and foster positive responses from fellow academic teachers and students while implementing the upper-level decisions. From the departmental level, academic administrators had to propose a hazard management plan according to the government circulars issued by the Ministry of Health, circulars from the University Grant Commission of Sri Lanka, and internal memorandums from the University of Visual and Performing Arts. All circulars and internal letters were not in

³ This was in development for over 30 years before the Covid 19. LEARN was promoted for the HEI in Sri Lanka under the authority and support of the University Grant Commission (UGC) and the Telecommunications Regulatory Commission of Sri Lanka (TRCSL)

favour of group-based performing arts practices or any similar group activities that demand physical interactions.

The University Grant Commission letter UGC/CH/7/1/, UGC/CH/8/, UGC/CH/9/1/, UGC/CH/10/1/, on 4th July 2020 also states that

(I)t is advised to complete revisions and practical classes of those who are yet to complete in the shortest possible time period - preferably within four weeks or less followed by (the) commencement of the examinations. That is, a group of students should not be brought to the university for a continuous period of not more than four weeks. (...) Students should be advised to leave the university premises immediately after the conclusion of the particular academic activity, and under no circumstances shall be permitted to remain in university premises after 7 p.m. (UGC, 2020)

Common government decisions, circulars, and policies can harm some academic institutions, such as UVPA, which has different levels of needs than other academic disciplines. All major disciplines of the UVPA mainly consist of praxis-inherent degree programs and course units. As a creative arts-dedicated university, it was a rapid shift for the UVPA for the teaching practice, which offers a larger proportion of practical components for their degree programmes. Approximately 20% of the curricula of the Faculty of Dance and Drama have theoretical components delivered through lectures, while 80% of the curriculum is delivered through interactive practice-oriented methods (Ferdinando, Pathirage, Abeshika, & Nethsinghe, 2021).

The general academic semester contains 15 weeks of teaching with an additional two weeks of study leave and 5 weeks for summative assessments. It was much more difficult to complete the teaching and assessments within 4 weeks, where students needed to complete 4 units, including performance-based assessments, and a supervised dissertation. However, these issues could have been addressed if the university had implemented an online learning system that also can be adapted for remote teaching and learning practice when it is necessary.

It was also difficult for any academic member to suddenly convert to a technological-based content delivery and assessments without a properly implemented system, required facilities and development training. Due to a lack of training in technology-based pedagogical practice and resources, most of the teaching staff were also confronted when they had to conduct online teaching (Samarasinghe & Nethsinghe, 2023). A survey conducted by the Asian Development Bank (ADB) reveals that the Sri Lankan State University practice, although 70% are in favour of online teaching at the UVPA, is relatively low compared to the other state universities in Sri

Lanka (Hayashi, Garcia, Maddawin, & Hewagamage, 2020). In 2021, after nearly two years online higher education after the first wave of the COVID-19 pandemic, ADB Briefs No 213 also discloses that blended learning (online + face-to-face) was the most preferable learning methods by the State HEI students (58%) and students followed by their choice in 100% face-to-face learning (24%). Faculty members also mostly preferred blended learning (83%) followed by 100% face-to-face learning (12%) (Hayashi, Kaushalya, Hewagamage, Garcia, & Amarathunge, 2022). Interestingly, the latter survey also reveals that blended learning was the most preferred learning method by discipline in performing arts (48%), which is the lowest preferred discipline, and medicine (83%) is the highest (2022).

At the UVPA, online teaching was not consistently used for all years of the degree programs. It was primarily implemented for selected final-year units, including dissertation supervision and performance writing. Over time, this method was expanded to include other levels, although it remained limited to knowledge-based subjects due to the challenges of conducting skill-based courses online. The main challenge for the facilitators' entity is the absence of technological knowledge for content delivery and assessments. As per the case study, some staff members of the music faculty, particularly senior members, resisted teaching online due to their lack of experience or belief that they had to learn and improve for conducting online teaching, and there was no feasible solution available (Samarasinghe & Nethsinghe, 2022a, 2023). The Faculty of Dance and Drama had that initiative with the other faculties of the UVPA and conducted professional development sessions for technology-associated online training and assessments (Ferdinando et al., 2021).

A survey result shows that 93% of participants of the UVAPA would prefer using video instructional materials at their convenience, while 78.1% of the participants had accessed the LMS uploaded content repeatedly, 10-15 times (Samarasinghe & Nethsinghe, 2022a). When it comes to the assessments, despite 38.1% of the participants disagreeing with conducting online assessments, surprisingly 61.9% agreed to participate in online practical exams; however, the majority (93%) of those who agreed, proposed an asynchronous method for uploading audio and video recorded material to the university LMS as the best solution (Ferdinando et al., 2021). Moreover, in a study by Embogama (2022), the findings indicated that the undergraduates at the University of the Visual and Performing Arts were familiar with and largely receptive to using the university LMS for academic-related activities, with the primary preference being for downloading learning content and supplementary resources. However, the LMS had its drawbacks as it encountered technical disruption, which interrupted timely

uploading, corrections of submissions, and submission of larger files. These issues occurred due to a lack of technical resources, trained staff, and insufficient staff student training for technical-based teaching and assessment management.

In addition, technical and financial disadvantages of the students have to be expected as they come from different places in the country and have diverse socioeconomic backgrounds. A student survey was conducted in May 2020, which shows that despite 99% of the students having smartphone devices, most students did not have a steady connection due to network issues and/or were unable to purchase mobile data due to financial constraints. Fourteen percent of those students indicated that they were not able to send any video files for practical assessments due to a lack of facilities (Ferdinando et al., 2021). As a result, the university and academic community conducted charitable donations, including data packages purchased from telecommunication providers, for the general student community and those who need other financial assistance.

Other assessments in courses that focused heavily on theoretical content were revised and primarily gathered as written submissions through the E-Learning Management System (LMS). If performance evidence was essential for the assessment and the university remained closed, one of the options was to upload video files demonstrating the performance process via the LMS.

Among other performance practice-based assessments, the major performance project of the undergraduate degree program of the Department of Theatre, Ballet and Modern Dance is the Final Year Performance Project. The department has three degree programs: Play Writing and Directing, Acting, and Mudra Natya⁴ and Modern Dance. Performance evidence-based assessments are a practical showcase of all four levels of the three degree programs, producing two major performances under two clusters: Play Writing and Directing, and Acting, a dramatic theatre performance under the drama category, and a dance theatre performance under Mudra Natya and Modern Dance⁵.

⁴ A ballet style which is locally developed.

⁵ Final Year Performance Project is the culmination of the skills of the degree program. The unit offers 6 credits, which officially allocates 300 notional hours for one performance project. However, it is a pleasurable and memorable performance activity and a tradition for the final year students through their last two semesters with the collaboration of the junior years and the alumina community. All other junior years and some alumina community support the final year performance voluntarily in many ways including raising fund and preparing meals for all the cast, crew, and supporters. Hence, introducing any alternative assessment could be taken negatively by students and some academic staff as it could diminish the spirit and experience of the final-year students.

In the domain of performing arts education and practice, various higher education institutions (HEIs) around the world integrated innovative suggestions, demonstrations, and conceptual models to facilitate continuous teaching and learning during the COVID-19 pandemic. However, these initiatives were not widely adopted by the global HEI communities, primarily due to the lack of adequate time to implement new teaching and learning strategies or pedagogical concepts. The sudden global impact of the crisis necessitated immediate responses for the continuation of teaching and learning, which limited the opportunity for adaptation.

The UVPA had its practicable structure. With restrictions of the one-meter social distance rule during practical classes and any other academic activities as per the government regulations, considering institutional policies, responding to social conditions at the time, considering the wellbeing of students as well as academic and supportive staff, and maintaining industry benchmarks of performing arts and education sectors, the department proposed a tentative plan for performance making: 1) Find a new play, preferably a monologue or a text with limited characters; 2) This play can be broken into units, individuals can be assigned to practice without group interactions, and later it can be combined as a whole performance; 3) This play must be suitable to assess individuals with rubrics for evaluating their creative skills in acting, directing, designing, and management; 4) If physical gathering is ceased, the play must be suitable to be practiced individually at home, recorded with their available devices, and later submitted as video clips for assembling one performance; 5) This play must be suitable for production at a low-cost budget as the university had cut down the funding for any performance activities at the time.

In light of the circumstances at the time and the need for practical adaptation in course delivery, the Department of Theatre, Ballet, and Modern Dance has developed a plan that includes the following recommendations: 1) If there is no immediate plan for the university's reopening and social interactions are entirely restricted, students should submit a performance design and descriptive writing as an alternative assessment via distance mode individually; 2) If social interactions are limited and there is no immediate reopening plan, students should provide performance evidence through a recorded video file, accompanied by reflective journaling and designs, either individually or in small groups; 3) If the university reopens with imposed restrictions, students should produce a short performance task conducted individually or in small groups, along with reflective journaling and designs; 4) If there is a reopening with minor restrictions, students should create a performance response to the given situation; 5) If the

university reopens without restrictions, students should produce a full-scale performance as originally planned.

As per the suggestions, Sarra Kane's *Psychosis 4.48* play text was performed by the final year students, who were completing the Acting and Playwriting-Directing Degree programs of Bachelor of Performing Arts Honours Degrees at the UVPA in 2020. First, the final-year students were asked to attend the university and quarantine for a week, and then the administration facilitated them to stay under a "social bubble" with minimum social interference. The play text was selected and adapted to meet the new requirement and the contingency plan. The plot of the play text was divided into 'dramatic beats' and each student was allocated to rehearse a given performance beat of the play text independently in their allocated separated spaces in the university, with a possibility to rehearse at their home in case of a physical closure, expecting onsite or virtual performance assembly. The rehearsals could be supervised with physical attendance under the health guidelines or via virtual conferences such as Zoom meetings or WhatsApp meetings. The play was performed in the hallways and open lobby in an open area to minimize viral transmission rather than working at a studio or theatre space.

Such planning and implementation aligned with face-to-face, synchronous and asynchronous teaching and learning modes simultaneously in responding to the foreseen risks. However, both the educator and the learner must have the mindset and attitude to adapt to this new pedagogical content practices using the available technologies and working in a team.

In general, managing and facilitating learners is a challenging process. Mainly, the learners' attitude and resistance to the new practices were the larger issues, along with the unavailability of technical resources, class size, and time duration of online classes, including proper equipment and connection facilities. In addition, poor learning engagement and economic disadvantages were also distractions for learning engagement. Most of the research (Lorenza & Carter, 2021; Pratama & Surahman, 2020; and Li, Li & Han, 2021) in performing arts in global HEI practices found similar concerns that are not unique to the UVPA.

Literature review on established models of online learning

Before the COVID-19 pandemic, general theories in education concerning digitally supported learning modes were widely accepted, and some were adapted to address the issues during the physical closure of the educational practice. This article specifically focuses on hybrid and

blended education models, which can be adapted for general educational practices, including performing arts.

Tessa Rixon, Anthony Brumpton, and Carly O'Neill (2021) proposed a model for digital pedagogy for Inquiry-Guided Production Arts Projects (see figure 1). The model mainly proposes to respond to three 'overarching external parameters'; institutional framework and policies, student wellbeing, and real-world relevance. In the essential components of project-level inquiry, it is crucial to establish a framework that reflects real-world practices and anticipates future benefits. This involves promoting a student-driven process while supporting and encouraging students in their endeavors, as well as providing industrial mentorship opportunities. The virtual theatre project serves as a central focus for these considerations. This model illustrates how creative works are shaped by both external and internal factors, particularly the influence of policies that priorities wellbeing and safety while also aligning with contemporary values.

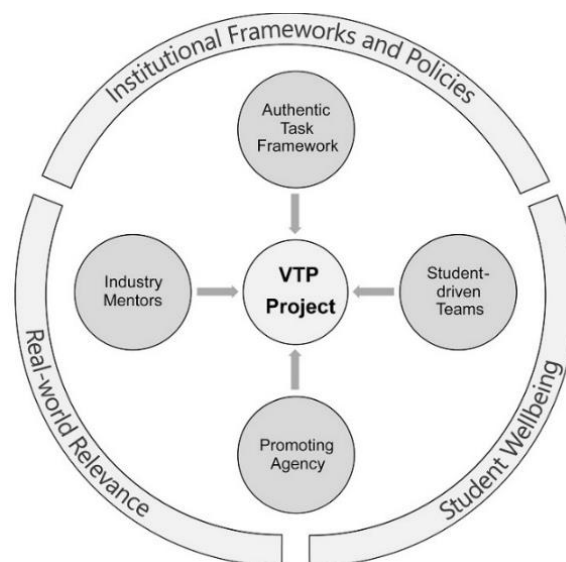


Figure 1: A model for digital pedagogy for inquiry-guided Production Arts project (Rixon, Brumpton, & O'Neill's model 2021)

More widely, the 'community of inquiry' model (Garrison, Anderson, & Archer, 2000) identifies three distinct "presences" for online learning environments (figure 2). The model, which visualized three distinct circles that overlap in the middle, indicates *Social Presence*, *Cognitive Presence*, and *Teaching Presence*. The three 'presences' create a *Learning Experience* as a common result through merging their different perspectives. This model identifies three main forces and co-forces from the perspectives of pedagogy, ability, engagements and support, which acknowledge a learning environment. This model also comprehensively positions the learning experience with the, context, medium, application and

benchmarks. However, this model requires further adaptation and clarifications for the perspectives of deferent learners/learning modes and the use of technology-based teaching and learning with required different set of skills and knowledge.

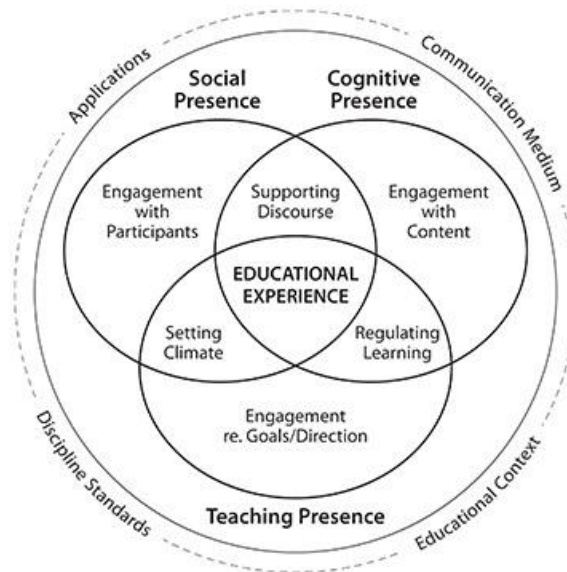


Figure 2: the 'community of inquiry' model (Garrison, Anderson, & Archer, 2000)

From the perspective of an educator, the *Technology, Pedagogy, and Content Knowledge* (TPACK) Model (Mishra & Koehler, 2006) conceptualised seven types of knowledge is required for educators in the teaching process.

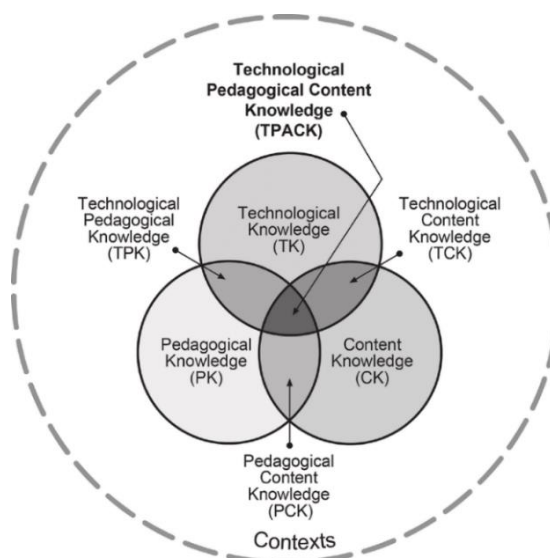


Figure 3: Technology, Pedagogy, and Content Knowledge (TPACK) Model (Mishra & Koehler, 2006)

TPACK is the centralised knowledge that is created through overlapping knowledge circles as visualized in the model (Figure 3): 1) *Content Knowledge* (CK) is the subject and associated knowledge in the lesson; 2) *Pedagogical knowledge* is the teaching techniques that can be employed to teach; 3) *Technological Knowledge* is the knowledge about technological

association for teaching. ; 4) *Pedagogical Content Knowledge* (PCK) which is the blend of PK and CK teaching techniques that can be employed to teach the particular content; 5) *Technological Pedagogical Knowledge* is a blend of TK and PK which is the knowledge of how to teach with necessary tools. 6) *Technological Content Knowledge* creates a force with TK and CK that the explicit knowledge about how the technological tool works with the content; 7) *Technological Pedagogical and Content Knowledge* is the understanding that the tools and techniques you use to teach the content (Mishra & Koehler, 2006). Though this model mainly acknowledges the perspectives of the educator, the required knowledge and skills of a learner are not articulated perceptibly.

SAMR framework by Ruben Puentedura (2006) discusses four levels of technological involvement in the teaching and learning process. The model works as a ladder to encourage teachers to progress from the foundational level to four higher levels in teaching and learning with technology (Hamilton, Rosenberg, & Akcaoglu, 2016). The acronym SAMR stands for *Substitution, Augmentation, Modification, and Redefinition* under the process of enhancement and transportation. In this process, *Substitution* directly alternates existing technology but keeps the function as it is. *Augmentation* is a technological substitute which is used to improve operational work. The classifications of the latter two approaches indicate the enhancement of the teaching and learning process. Under the classification of transformation, *Modification* employs technology to redesign the task while *Redefinition* allows to creation of new tasks previously not an option. The SMAR is functional in both synchronous and asynchronous learning modes and is also purposeful in onsite classroom practices. As per the SMAR, the model is a guidance for the progression of teachers, it does not attentively explain the learner and teachers' engagements and conditions.

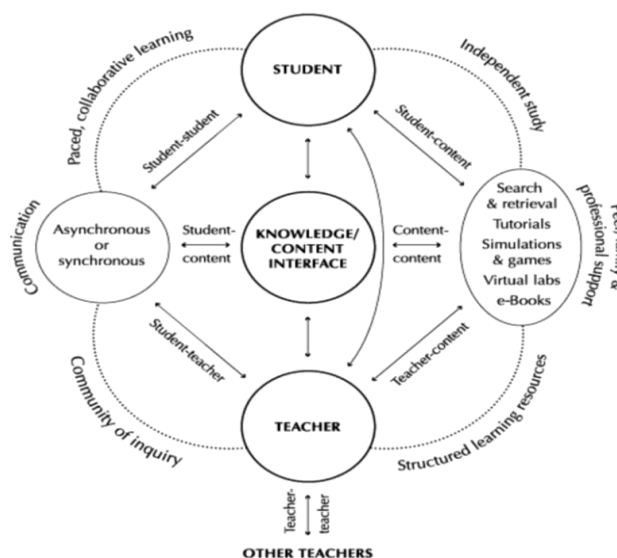


Figure 4: Anderson's online learning model (2011)

Terry Anderson's (2011) online learning is a conceptual model that centralises the knowledge-content interface of students and teachers. The model (figure 4) acknowledges different interactions of the later mentioned two parties and the content: *student-student*, *student-content*, *teacher-content*, *student-teacher*, and *teacher-teacher*. The model also acknowledges four learning types: paced collaborative learning, independent learning, structured learning resources, and community of inquiry. Family, peer and professional support, as well as communication, are highlighted here for synchronous and asynchronous learning and retrieving learning resources and tools. Anderson's online learning model is comprehensive except for the awareness of different skills and knowledge required from both educator and learner, as well as its limitation to online learning rather than blending learning modes.

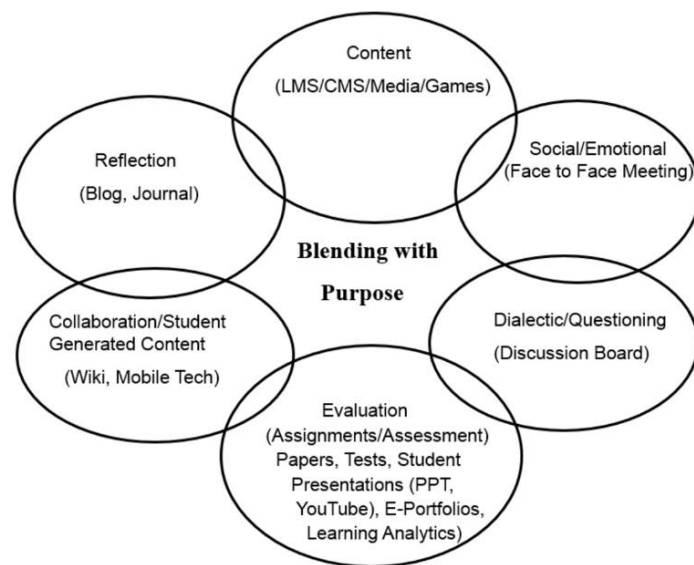


Figure 5: Picciano's Integrated Model - Blending with Pedagogical Purpose Model(s) (2017)

Anthony G. Picciano's Integrated Model - Blending with Pedagogical Purpose Model(s) (2017) suggests three integrations: learning technology, generations, and learning styles, which consist of six pedagogical goals and approaches suitable for different types of learners (figure 5). The six integrations unfold as follows: 1) *Content* provides instruction through variety of ways; 2) provides students with needed *social and emotional* support; 3) acknowledges the activities of *Dialectics or Questioning* that instructions for teaching and learning to develop a discussion with critical thinking; 4) *Reflective* an extensive frame of scholarship which echo on what is learned and shared by learners and educators; 5) *Collaborative learning* is another goal and approaches allow learners to build team responsibility through different learning modes and media; 6) *Evaluation* can be done in any media which is the process that educators assess progress and effectiveness of teaching while learners can review own progress (Picciano, 2021). The

blending with the Purpose approach was again modified as a Multimodal Model for Online Education by adding community interaction and self-learn independent study (Picciano, 2021).

Discussion

In an analysis of the UVPA scenario, educators who did not have the TPACK currency faced challenges in conducting teaching practice and evaluation online. In addition, training in TPACK was a required professional practice despite the available and subscribed facilities of virtual platforms and tools such as Zoom, the LEARN system, and the LMS management system at the own institute. As a creative-arts dedicated university having more practice components in the degree programs, the UVPA needs all three forms of teaching-learning modes: onsite face-to-face, synchronous, and asynchronous. Additionally, the content with practice and assessments must be adapted to meet different needs and to reflect the diverse understanding of arts praxis among learners. Additionally, the content with practice and assessments must be adapted to meet different needs and to reflect the diverse knowing of arts praxis among learners. It can also be noted that peer, social, and professional support are also required factors, along with correct technological facilities. Government decisions, policies, and available facilities can impact the teaching and learning process.

In blended learning, digital education serves as tools for real-time learning, while hybrid learning uses tools for both remote and on-site learning with real-time and flexible options. As COVID-19 reminds the education sector of the importance of having a contingency plan, these three options must be considered and available in contemporary educational practices. Knowledge in *Technology*, *Pedagogy*, and *Content* are essential for teaching as well as learning. *Social Presence* and *Cognitive Presence* are considered important as they align with *Teaching Presence* as they acknowledge the motivation, collaborative engagement, and support of community, peers, and professionals. Moreover, the models discussed earlier generally identify synchronous and asynchronous learning and face-to-face on-site interactions. However, learning modes including blended learning, accountability, required qualities, skills and knowledge, attitudes, practice, support, and conditions are altogether not acknowledged in these models.

Tandem Bicycle Model (TBM) for hybrid teaching and learning Management

The Tandem Bicycle Model (TBM) is a conceptual model for mapping a teaching-learning process in hybrid learning. Metaphorically, it is a shared bicycle ride of two parties, the

educator and learner, with different preferences in teaching-learning modes, onsite face-to-face as well as both synchronous and asynchronous movements of paddling in balance with shared forces.

A tandem bicycle has been both metaphorically and materially used in different research. Earlier, research collected data based on the relationship between forced or active-assisted exercise through tandem cycling for the development of motor function in Parkinson's disease patients (Mohammadi-Abdar, Ridgel, Discenzo, & Loparo, 2014). In addition, another research suggests that cycling in a tandem causes lower physiological stress than cycling at the same speed on a single bicycle (Seifert, Bacharach, & Burke, 2003). Thus, this empirical research evidence can be employed as a metaphor for teaching and learning in the higher educational system with the facilitation of the educator. In an extended description, tandem bicycle modeling can be used to illustrate the ecosystem of teaching and learning for a hybrid learning process under the condition of available resources and technological pedagogical content knowledge of participants, as well as supporting communities and resources that create the dynamic environment.

The Tandem Bicycle Model (TBM) in this study symbolises the effective vehicle for teaching learning in a contemporary higher educational setting (figure 6). The framework identifies quadruplet riders, three on a main riding bicycle, including one on an attached vehicle seat. This model recognises the following conditions, competencies, knowledge, engagements, and practices under seven stages: 1) willingness; 2); various modes of teaching and learning 3) qualities; 4) required knowledge and skills; 5) conducts; 6) supports; and 7) conditions. Considerate alignments of the seven stages can produce a supportive technological pedagogical ecosystem (TPE) for learners and educators.

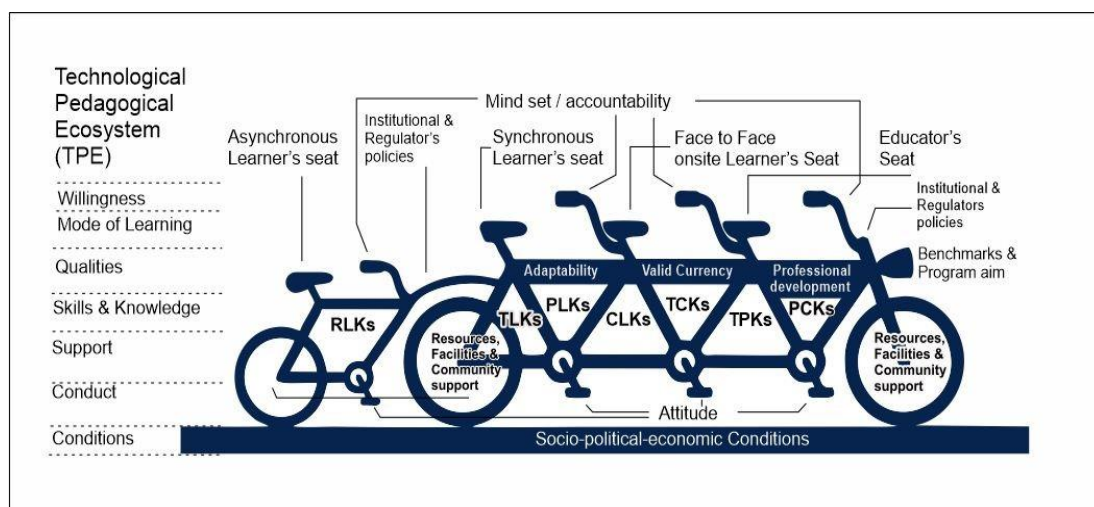


Figure 6: Tandem Bicycle Model (TBM) for hybrid teaching and learning management

Modes of Learning

Quadruplet forces of the paddlers in the teaching-learning practice symbolically represent a collaboration between educators and learners. All paddlers in the main bicycle frame have separate seats and paddles, which means they have to work as a team and give force to operate the bicycle without stopping.

The front seater is dedicated to the educator, the first paddler, who sees the road ahead but with limited control (rotating power) of the direction of the teaching and learning process. The educator in the front seat has to facilitate the teaching mood for all the following paddlers/learners for hybrid learning engagements and preferences. In a hybrid learning environment, educators mainly facilitate learners who prefer on-site, face-to-face classroom learning, synchronous learning, and asynchronous learning modes.

The second paddler represents onsite learners with a face-to-face interaction mode in teaching and learning. In performing arts practice, onsite practice is crucial for multi-sensorial engagement and experience in a physically shared space in real time. In a pandemic situation, teacher-learner groups working in a protective environment or/and with required physical distance for real-time interaction can be strategic if the learner performance practitioner needs to perform in a physically shared space as in the traditional performance practice.

The third paddler is for synchronous learning, where the teaching and learning model in a hybrid of on-site and distance modes, virtually or physically, works in real-time in the same time frame. The practice requires resources, adequate TPACK, content development, professional development training, and modified assessment criteria from the perspective of educators. From the students' perspectives, resources, peer/family/institutional supportive environment, training must be.

Inadequate facilities and resources, unavailability of digital devices, poor internet speed, insufficient data allocations by telecommunication providers, poor content materials, problematic assessment methods, and unsupportive physical and social environments can be the resistance for real-time synchronous teaching and learning. However, considering strategies, planning for resources, and implementing the practice at least in a small scale in a normal functioning time, would be useful for a smooth transition when unforeseen interruption occurs.

The fourth paddler is an asynchronous learner. The paddler is symbolised in an extended carriage attached to the bicycle. In a remote condition, asynchronous mode is the more flexible option when a learner is working on two priorities, social and educational. The teacher /trainer must understand the needs of the asynchronous learner and cater to such dynamic needs. Although this learning mode is out of the main frame of the model, this learning mode requires more skills and competencies in learning compared to supportive learning practice in real-time.

Willingness

Mindset and accountability are the important factors of the journey. Particularly, self-motivation and readiness through experience are essential of andragogy. Despite how effective the online materials are, without the mindset and accountability developed through both intrinsic and extrinsic factors, the teaching and learning process is not effective. The handle has the controlling factor set up by the mindset or accountability. Each rider has their handle of control, and the front seater must take the main accountability with a strong mindset of the teaching and learning processes because of the educator's roles such as a worthy training.

The lower parts of the handle, the bicycle front tube and forks, and the connecting tube of the extended carriage of the tandem bicycle signify the policies and regulations set by the institutes and other regulators. The dynamo light is the aims and objectives of the degree program/unit as well as the subject benchmarks.

Teaching-Learning Qualities

As indicated in the upper frame of the TBM, both the educator and the learner must maintain three qualities for the dynamic ride in this teaching and learning process: 1) professional development/training, 2) maintaining competency/valid currency; and 3) adaptability. Training and professional development are essential for educators working with new technologies, new media, and the development of content based on these media, with the goal of engaging the new generational learner. Learners are obliged to embark on training for working with new technologies and new media, and access to work with new media contents. The second quality is maintaining competency and valid currency. Educators and learners acquire valid currency and improve competencies through practice, not only for optioned educational engagement mode but for all. With all three qualities of practice, educators and learners would be able to maintain an effective teaching-learning process. Adaptability is also a vital quality for the teaching-learning process. Accepting new media and technology and utilising them as a learning tool for onsite, synchronous, and asynchronous modes are a

reflection of quality practice. As evident in the surveys highlighted in this research paper (Ferdinando et al., 2021; Samarasinghe & Nethsinghe, 2022b), it indicates that educators and learners who do not possess such qualities tended to resist employing functional teaching-learning strategies during COVID-19.

Knowledge and Skills

The upper triangle shape frames that connect the cyclists in the TBM are the knowledge and skills required. From the front wheel, under the Educator's seat, three distinguishable knowledge and skills are essential. Adapted from the TPACK model (Mishra & Koehler, 2006): 1) Pedagogical Content Knowledge and skills (PCKs) is a competency in to teaching different contents meaningfully through different pedagogical approaches, 2) Technological Pedagogical Knowledge (TPKs) and skills is a competency in applying different technologies for pedagogical approaches, and Technological Content Knowledge and skills (TCKs) is a competency in employing specific technology for specific content. Triangle frames which holds onsite, synchronous, and asynchronous learners are the required skills and knowledge: 1) Content Learning knowledge and skills (CLKs) is a competency that learners develop to learn content; 2) Pedagogical Learning knowledge and skills (PLKs) is a competency that learners aware the pedagogy associate with their learning; 3) Technological Learning Knowledge and skills (TLKs) is the competency that learners employ appropriate technologies for their learning and assessments; and 4). Reflective Learning Knowledge and skills (RLKs) is a competency that learners reflectively acknowledge their learning progress through self and program assessments.

Conduct

The chin and paddle of the TBM refer to teamwork, effort, and responsibility in teaching and learning processes which is the attitude of learner. The cycling power and the driving force depend on this paddling power. Finally, the main frame of the tandem bicycle is moving forward with team commitment and equal pedaling force. In education, the educator is not the sole paddling force, but the educator also reaches the intended learning outcomes through shared commitments of the educator and learner. Educational Institutes, which have physical student intakes, fundamentally focus on onsite and synchronous learners while offering options for asynchronous on-demand and extending their practice considering the needs of distant learners. In an asynchronous teaching-learning mode, learners are supported by the onsite and synchronous practice in this metaphoric vehicle of education. Asynchronous learners have their

chains and cogwheels, which means they also have to use teamwork, effort, and commitment to collaborate with the extended supportive forces.

Support

Teaching and learning require support from surrounding communities with necessary resources. The wheels of the tandem bicycle refer to the Technological Pedagogical Ecological support (TPEs). From both learners' and educators' perspectives, technological resources-facilities, training opportunities, required facilities, supportive administrative policies, etc., are the institutional support for smoothly conducting the teaching-learning practice. In addition, family and peer support are also vital. Peers can provide constructive feedback, support in team teaching, and make the working environment more professionally acceptable. In addition, when working remotely, such as working in home conditions, family members and educator-learners have to share the home-based spaces and facilities. Having such resources and opportunities as well as social-professional support creates an ecosystem relation with technological pedagogical supports.

Conditions

TGM acknowledges how the socio-political-economic conditions of the country affect the educational process. In the TGM model, the road signifies later conditions. If a country has a poor economical-political management such as not allocating budget and management in educational sector for needed, proper resources, required services, student allocations, vocational and high educational pathways, hire educators for student ratio, providing trainings, and facilitate adequate infrastructure, it would not be adequate for the educational system. In addition, technological facilities such as new media, affordable educational devices and tools, and affordable and reliable internet connections are essential for establishing and maintaining a sustainable educational practice. Educational institutions have to manage and negotiate with the government or regulators for providing necessary needs for vocational or degree programs. In addition, visionary policies and virtuous governing by the particular government or educational institutional system could make the path of the education process less challenging. The value of education, job opportunities and career pathways, the value of profession, social applications in education, and industrial support are the social and professional conditions that affect the educational process. Hence, when the condition of the road (social, economic, political, and professional) is better, cyclists (educators and learners) could have a steady journey in this educational process.

Conclusion

Managing education without interruption is essential by utilizing strategic plans similar to the recommendations UNICEF issued during the COVID-19 pandemic. The COVID-19 pandemic brought common and different subject-specific issues as well as socio-economic issues. In this research paper, a prominent online education model and the performing arts-specific case study of the UVPA have been evaluated for suggesting better practice in education for now and in the future. The Tandem Bicycle Model is the result of conceptual development in understanding and proposing hybrid teaching and learning suitable for creative arts and more general educational practices in HEIs. TBM acknowledges seven steps of effects in teaching and learning: various teaching and learning moods; mindset and accountability; qualities, required competencies, community support and resources, good conduct; and socio-political-economic conditions.

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