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Transitioning the Flipped Classroom Model from the Traditional to Hybrid and Virtual Learning Environment

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Abstract: The abrupt closure of schools around the world quickly became a hallmark of historic events resulting from the onset of the COVID-19 pandemic. Educational leaders at the international, national, and local levels have since grappled with the process of strategic planning to continue to provide educational services for students. As educators contend with the unprecedented responsibility of constructing frameworks that transition their entire learning communities to virtual and hybrid environments, the immediate needs of the education community are positioned to benefit directly from the increasing momentum of the Flipped Classroom community. Flipped Classrooms (FC) are a method of instruction that have been growing in popularity, due to their capacity to increase instructional efficiency, expand capacity for instructional differentiation, and enhance student learning outcomes. The FC model inverts the traditional classroom structure. Direct instruction is moved away from the classroom and to the individual space. Classroom time is then reserved for activities that entail active learning. The traditional FC model accomplishes its objective within the context of the traditional teaching and learning environment. In the wake of a collective shift away from the traditional learning context, this narrative literature review describes how the FC model and its variants can be integrated into the hybrid and remote learning contexts of the scholastic environment.

Keywords: Flipped Classroom, hybrid learning, remote learning, virtual learning, COVID-19, coronavirus

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Transitioning the Flipped Classroom Model from the Traditional to Hybrid and Virtual Learning Environment

Flipped Classrooms (FC) are a method of instruction that have been growing in popularity, due to their capacity to increase efficiency of time utilization and differentiation of instruction for students. The FC model is a structure that inverts the traditional classroom structure. Direct instruction is moved away from the classroom to the individual space. Instruction is usually provided in the form of video clips, interactive PowerPoints and embedded quizzes. Classroom time is then reserved for activities that entail active learning (Hwang & Lai, 2017; Song & Kapur, 2017; Tiahrt & Porter, 2016). As a result of the blended learning structure, instructors have begun to see increases in student learning outcomes, self-efficacy and self-regulation (Çakıroğlu & Öztürk, 2017; Hwang & Lai, 2017; Song, et al., 2017). This effectiveness has been proven both domestically and internationally, in countries that include Canada, France (Stanciu, 2016), Taiwan (Chen et al., 2020), and Oman (Pandow et al., 2020). Effectiveness has also been demonstrated across multiple content areas, including Science, Math, Engineering, Technology, and History (Aidinopoulou & Sampson, 2017**;** Zengin, 2017). Evidence of efficacy has also extended from primary and secondary learning contexts to tertiary (i.e. higher education) settings (Chen et al., 2020; Kugler et al., 2019). Stanciu, (2016), a pioneer of the FC model, described these attributes and outcomes of the Flipped Classroom:

> It increases the interaction and the personalized contact among students and professors… It creates an environment where students undertake responsibility for their own learning …. From *the wise man on the stage,* the professor becomes a *guide* of the efficient learning…. It combines the direct teaching with the constructive learning…. It allows the students who are absent for different reasons not to stay behind…. The contents of the learning may be revised at all times…. It helps students be involved actively in the learning process…. It personalizes the educational approach for all students. (p. 354)

Applying the lens of Bloom's taxonomy, one might observe that through the FC model, lower levels of learning (i.e. remembering and understanding) occur in the home setting, while the classroom space is reserved for higher levels of learning [i.e. applying, analyzing and evaluating and creating] (Durak Üğüten & Balci, 2017).

Tiahrt & Porter (2016) described the FC model as a "major movement in academia" (p. 85). This recent but important shift in considerations for instructional forms that challenge traditional classroom structures and professional capacities has taken center stage in the wake of the coronavirus (i.e. COVID-19) pandemic, which has restricted access to the traditional classroom setting and shifted the educational community to

emergency remote instruction. As educational leaders and teachers have begun to recognize the role of technology in facilitating the continued progression of student learning, the FC model offers an opportunity for educators in the elementary, secondary, and tertiary settings to capture the synergistic strengths of both the physical and virtual learning environments. While the traditional FC model accomplishes its objective by moving direct instruction away from the classroom environment, it does so within the context of the traditional teaching and learning environment. Students receive in-person instruction in the traditional five-day format. Today, however, educational leaders are grappling with the unprecedented responsibility of constructing frameworks that transition their entire learning communities to virtual and hybrid (i.e. virtual and in-person combination) environments. In this context, these immediate needs of the education community are positioned to benefit directly from the increasing momentum of the FC community. Additionally, as more and more teachers are discovering the advantages of the FC model, instructors are now beginning to ask questions concerning effective variations of the traditional FC structure. This study will provide an overview of the FC model structure and its variants. The original FC model, hereafter, will be referred to as the Traditional Flipped Classroom (TFC) model. Implications for applying the TFC model and its variants within the hybrid and/or virtual learning contexts will also be discussed.

Literature Review

In the Traditional Flipped Classroom (TFC) model, students study and prepare for lessons by watching videos and by working through other interactive technologies outside of the classroom setting. Students then prepare and submit questions to the teacher, who uses the questions and student progress as a guide for planning subsequent in-class activities. Class time is then reserved for active learning strategies and individualized learning (Çakıroğlu & Öztürk, 2017; Hwang & Lai, 2017; Song et al., 2017). Through differentiated instructional techniques, the role of the student shifts from consumption of information to construction of knowledge, as higher levels of learning are activated. In this structure, the learner no longer passively receives information from an outsider (Kurt, 2017; Stanciu, 2016), but becomes actively engaged in the knowledge construction process. Meanwhile, the role of the teacher is characterized by facilitation, professional collaboration and ongoing research (Sun & Gao, 2019).

Genesis of the TFC Model

The idea of Flipped Classrooms emerged in 1990 in the Harvard University classroom of Eric Mazur, who in his presentation of *Peer Instruction*, set the groundwork, for what

would later be known as Flipped Classrooms. Mazur began a search for ways to increase peer interaction and collaboration. Other trailblazers included Jon Bergmann, Aaron Sams and Salman Khan, who - for Mathematics and Science courses - experimented with video instruction assignments, outside of class. Sams was inspired by Daniel Pink, who based his teaching methods on the work of Karl Fitsch. This method, called the Fitsch flip, entailed *lectures at night, "homework" during the day*. In an effort to help children learn Math, Salman Khan posted his videos online. Khan Academy now has 2,400 video presentations for the different fields of Math, Science, Economics, Human Studies and Computer Science. Khan believed that education should be flexible and consider the pace of each student. Moreover, he believed that students should learn how to teach themselves (Kurt, 2017; Stanciu, 2016).

The general idea of inverting classrooms evolved into and was established as flipped learning, moving group learning from the group space to the individual space, and allowing students to creatively apply content concepts in the classroom. Stanciu (2016) presented a framework established by The Flipped Learning Network, which identifies four pillars of Flipped Learning: F- Flexible Environment, L- Learning Culture, I – Intentional Content, P- Professional Educators. These pillars encourage FC designs that place students and their varying learning needs at the center of instruction, while also promoting the continual professional growth of teachers (Flipped Learning Network, 2020).

Present State of the TFC Model

Existing studies on the TFC model usually target and indicate that it positively affects student engagement and learner outcomes. It allows the teacher to guide, monitor and offer individualized support. The TFC model also offers an incredible opportunity for students to regulate their own learning (Çakıroğlu & Öztürk, 2017). Students, under the TFC model, are able to control the pace and volume of explicit introductions to new material and are able to more effectively retain new information (Zengin, 2017). They are, in turn, better positioned to be able to apply their learning to activities that engage critical thinking skills. The growing body of literature with regards to the TFC model and all of its emerging variations suggests that the model is more than just a trend, but signals a significant shift in the manner in which explicit instruction is delivered to learners of all disciplines. This multidisciplinary capacity spans the length of instructional settings from elementary to university-level instruction. (Stanciu, 2016; Tiahrt & Porter, 2016).

Although much of the existing research thoroughly explains what Flipped Classrooms are and their benefits in student learning outcomes, researchers have begun pressing to get answers as to *how* to integrate the model into classrooms (Song et al., 2017). Supporting research discovered that for a sample of Korean teachers, while they

approved of the integration of TFC technology into the instructional framework, most were uncomfortable with its implementation, because of unfamiliarity. The research acknowledged that these teachers needed training, support and intervention (Lew & Jeong, 2014).

Phase Analysis and Variations of the TFC model

The basic model for the flipped lesson entails phases that involve video modules, in which explicit instruction is obtained, outside of class. In-class time is then used to engage students in group and problem-based activities to encourage retention, student engagement and motivation, critical thinking and application of those concepts (Çakıroğlu & Öztürk, 2017; Stanciu, 2016).

Phase I. Direct video instruction, outside of the classroom

A great deal of time goes into preparing the video content for each lesson. Websites such as Khan Academy, however, give instructors a large digital library and variety of videos and online interactive tools to build a video base for instruction (Aidinopoulou & Sampson, 2017**;** Henrick, 2014). Zengin (2017) found that Khan academy and other free video software were effective in increasing student achievement in Math class. His work also addressed the concern that the videos would standardize content and the way that it is taught (i.e. deprofessionalization), assuring that teachers have and would continue to have the freedom to adjust, develop and share video content, as desired. In the development of video content, however, teachers should ensure that the videos meet certain criteria. According to Stanciu (2016):

> The video capsules made with the teaching staff must meet certain qualities…. The video capsules should be [no more than] six minutes…. presentations that are *combined with Power Point slides or with the help of an interactive flipchart* are more appealing…. The shooting of the film should be made in *a personalised framework… The live given explanations* are more appealing…. *The main courses divided into small modules* are more engaging…. The language in use must be characterised by *enthusiasm…* The creation of the video supports will have [also must be considered]…. The conferences must be conceived so that they should be watched once… tutorials must be [created so that they can] be watched several times. (p. 357)

Stanciu's criteria also suggested that student use should be considered in the video design process. Equivalent to in-person instruction, videos should be an appropriate length and engaging, allowing for students to participate through embedded quizzes and personalized videos designed to meet the specific learning needs of the course in-session. Gou et al. (2020) suggested, with some contextualized cautions, the use of video captioning to aid learner comprehension. Video designers should consult other professionals in design and during final review, to ensure that student learning is appropriately supported. Basal (2015) further suggested the use of basic, simple technological tools in the creation of instructional materials. Moreover, teachers (and other instructional designers) should consider the learning styles of the student audience, as well as their capacity to develop technical competencies necessary for engaging the content. Gomez (2016) asserted in her study that while her students were initially unfamiliar with the interactive tools for video instruction, they were able to develop the proper skills for utilization to complete the course. In her study on technology instruction, Martens (2020) recommended explicit instruction to develop student competencies around newly introduced technological tools.

Variation 1. Electronic book (e-Book) based flipped learning

Researchers expounded on this phase of the TFC model to solidify student understanding and retention by inserting questions or exams into the model, post viewing of the video. Students would have to correctly answer questions about the video content to proceed to the next phase of the content or be redirected to watch the video again (Çakıroğlu & Öztürk, 2017; Hwang & Lai, 2017). An additional benefit of this variant is related to an increased teacher capacity to gain an understanding on student knowledge, based on data provided through quizzing completed prior to an in-class session (Sun & Gao, 2019). In other versions, students were also able to take notes on the e-Books themselves (Çakıroğlu & Öztürk, 2017; Hwang & Lai, 2017). Hwang and Lai (2017) found that e-Book based flipped learning for a math course promoted self-efficacy and learning achievements. Students with lower self-efficacy improved more than students with higher self-efficacy. Students with lower levels of self-efficacy were motivated to spend more time engaged in the e-Books than those with higher self-efficacy. Kostaris, Sergis, Sampson, Giannakos, and Pelliccione (2017) also found that in an information and communication technologies (ICT) course, the TFC model most motivated, engaged and benefited lower performing students. Their motivations are claimed by the researchers to be tied to their sense of accomplishments. This variation of Phase 1 of the TFC model success is attributed to its ability to bridge in class and out of class learning through "seamless flipped learning".

Variation 2. Self-Study, Online Group, Double Presentation (SOP^2) model

In addition to explicit instruction and assessment via online technologies, teachers began to extend learning through online group collaboration, as a Phase 1 variant of the TFC model (Çakıroğlu & Öztürk, 2017; Chen & Chang, 2017). Typical of the TFC model, the SOP^2 model allows for autonomous learning, group learning and individualized instruction. In the SOP^2 model, Chen and Chang (2017) paralleled the design of the model to the Community of Inquiry framework, which asserted that the learning experience is formed through cognitive presence, teaching presence and social presence. Cognitive presence is developed through self-study (S), which entails constructivist learning, requiring self-regulation; online group discussion (O) is matched to social presence, in which learning is further constructed in the group setting. This collaboration may also extend to face-to-face classroom interactions. Double presentations (P^2) deal directly with student-teacher and student-student interactions, which allow the teacher to give feedback and facilitate group discussions.

Phase II. In-class activities

This leads our discussion to Phase 2 of the TFC model, in-class activities, also called face-to-face (FTF) instruction. These sessions are student-centered, collaborative and provide opportunities for increased student-student and student-teacher interactions and differentiated instruction. They are utilized to enhance understanding in order to increase learning outcomes (Zengin, 2017). Design of FTF instructional sessions is often based on data collected from student performance in Phase 1 assessments (Sun & Gao, 2019). While some research has asserted that classroom time may be used to clear up questions about pre-class content and activities, Tiahrt and Porter (2016) cautioned that the time should not be used as an opportunity to reteach what has already been learned or to introduce additional topics, increasing the stress and workload of students. Tiahrt and Porter instead offered insight into how to effectively use FTF time under the TFC model. They proposed that classroom time is used for mini-lectures, group activities, active learning and additional examples.

- *Mini-lectures* highlight key points, address common challenges for students and address controversial topics.
- *Group activities* are guided by content-based questions and focused on synthesis and evaluation, often leading to a class project.
- *Active learning* allows students to walk through real-world applications of target content.

- *Additional examples* allow students to practice new concepts in the presence of the instructor allowing for immediate feedback.

Variation 1. Problem-based learning and the Productive-Failure Flipped Classroom

Song and Kapur (2017) argued that, while the TFC model has proven beneficial in providing the appropriate amount of time for students to engage in Phase 2 active learning, little has been done to enhance the conceptual understanding and problem-solving skills of learners, within this phase. Direct instruction, according to the researchers, had simply been taken, unaltered, from the classroom to the home. Research, however, points to the importance of problem-based learning (PBL), which allows the student to engage in critical thinking and encourages collaboration, self-directed learning, self-evaluation and authentic learning. Students can set goals for themselves and plan a course of action to accomplish those goals (Çakıroğlu & Öztürk, 2017). Song and Kapur argued that the lecture style of learning does not allow for students to "engage" and "explore" new concepts (p. 294). They suggested the integration of the "productive-failure" pedagogical design into the TFC model to promote problem-based learning, increasing conceptual understanding. This variant is a full model modification of the TFC model that proposes an additional layer is added to the framework. Prior to beginning the instructional video, students will work collaboratively to solve a problem using prior knowledge, motivating the students to learn upcoming concepts. The idea is that students fail to solve the problem without the introduction of novel concepts. That failure becomes productive, if it assists in constructing new knowledge (Song & Kapur, 2017).

Generalizing efficacy of TFC variants

While much of the literature concerning the TFC model and its variants has stated that validity is compromised due to the small sampling size and lack of research in the area, the confirmation of findings in related studies using similar or equivalent testing work to solidify the external validity of findings across various subjects (i.e. assure the absence of Type I error). Studies have reported proven increases in Science, Technology, Engineering, and Mathematics (STEM) classes, History, and ICT courses (Aidinopoulou & Sampson, 2017; Hwang & Lai, 2017; Kostaris et al., 2017; Zengin, 2017). Sparse literature both supports and negates the efficacy of the TFC model and model variations in world-language courses. Lyddon (2015), for example, expressed concern that the general structure for the TFC model is impractical and does not meet the core needs of foreign language instruction. On the other hand, a qualitative study conducted by Basal (2015) on pre-service teachers in a foreign language class found that the teachers had

positive perceptions of the TFC model, as they felt, it promoted motivation and in-class participation. Gomez's (2016) study also found an increase in student participation. Focusing on building vocabulary through ICT integration in second language acquisition, Anna Wing-bo Tso (2020) evaluated the efficacy of digital platforms designed specifically to aid this process. Her findings emphasized the importance of online activities that promote authentic contextualization (e.g. resume writing), opportunities for individual constructivism (e.g. poem writing), and collaborative interaction (e.g. gaming designs) in the virtual learning context. Pastushenkov (2020) provided some confirmation on the efficacy of online learning apps for beginning and intermediate language learners, especially as it relates to student gains in achievement on multiple choice exams. Findings from these studies suggest potential benefits of integrating learning apps into the virtual instructional context or providing access to these apps as an additional resource for learning. Durak Üğüten and Balci (2017) asserted that while anecdotal evaluations of perceptions of the TFC model exists, little literature exists for student performance under the TFC model in a foreign language classroom.

Discussion on Transitioning the FC Model to the Hybrid and/or Virtual Learning Environment

The abrupt closure of schools and shift to emergency remote teaching around the world quickly became a hallmark of historic events resulting from the onset of the COVID-19 pandemic. Educational leaders at the international, national, and local levels have since grappled with the process of strategic planning to continue to provide educational, nutritional, and (mental and physical) health services for students. As elementary, secondary, and postsecondary educational leaders contend with the unprecedented responsibility of constructing frameworks that transition their entire learning communities to virtual and hybrid environments, these immediate needs of the education community are positioned to benefit directly from the increasing momentum of the FC community.

Defining Hybrid and Virtual (Remote) Learning

Two popular plans have emerged for implementation by US American school districts during the Fall 2020 scholastic semester. *Hybrid learning* entails a combination of in-person (i.e. face-to-face) and online (i.e. virtual) learning. The rationale for this model relies on increased student safety in the learning environment, by reducing the number of the students on a campus at one time. Half of a school's student population (i.e. Group 1), for example, would attend school in person for two designated days (e.g. Monday and Thursday) of the school week, while the other students (i.e Group 2) participate in virtual

classes from home. Group 2 might then attend in-person school on Tuesday and Friday, while Group 1 attended virtual classes from home. Wednesday might be reserved for disinfecting the school facilities. Multiple variations of this hybrid plan were presented by districts to their communities across the United States. A major competing alternative for this framework involves *remote* (i.e., distance, virtual) *learning*. In this format students engage in all learning via online instruction only (Chuck, 2020; School Districts' Reopening Plans: A Snapshot, 2020). The following section presents strategies for incorporating the FC model into these district plans.

Integrating the FC model into the Hybrid and Virtual Learning Formats

As described above, The FC model typically entails two major components of student learning. In a traditional classroom environment, Phase 1 engages students in direct instruction away from the classroom or group environment. Phase 2 reserves the classroom space for interactive, authentic, problem- (i.e. inquiry) based activities that increase student learning around target skills and concepts. The in-class/online structure of the *hybrid* schooling plan creates an opportunity for the maximized employment of both phases of instruction for the FC model.

*FC Model Under the Hybrid Schooling Plan (Phase 1*Virtual Learning Component)*

Students participating in the virtual learning component of the hybrid alternative would be engaged in Phase I of instruction under the FC model. For this phase of learning, students would watch and interact with pre-made teacher videos stored in a digital library. Teams of teachers would collaborate around the construction of video recordings using platforms, which include, but are not limited to Microsoft PowerPoint and Screen-Cast-O-Matic.com. The former option would allow instructors to take pre-existing presentations, record voiceover instructions, and save the presentation in video formats. Teacher-made videos would then be uploaded into a digital library to be accessed by students in the virtual learning environment. Options for storage of virtual libraries could range from school networks to a school or classroom-dedicated YouTube Channels. (Teachers should ensure that videos comply with local, state and federal regulations prior to publishing on an online platform.) Students would be able to independently access video lessons, as well as have control over the pace and volume of learning through pause and rewind features of video playback. Technological platforms, like Edpuzzle.com, have increased opportunities for interactivity with video instructions. Through Edpuzzle, teachers can embed questions at various benchmarks into the video playback to assess student comprehension. Students receive immediate feedback and are either prompted

to review relevant material or permitted to continue. As described earlier, this e-Book variant of Phase 1 instruction increases student engagement and self-efficacy. Increased self-efficacy (i.e. student confidence) is associated with increased achievement (Bandura, as cited in Hoy & Hoy, 2013). Also, as described, research (Hwang & Lai, 2017) has demonstrated comparatively greater gains for lower-performing students under this FC model (Phase 1) variant. Subsequently, implications for reducing achievement gaps for varying categories of disparities (e.g. race, gender, income) should be considered as potential tangential outcomes.

FC Model Under the Hybrid Schooling Plan (Phase 2 Face-to-Face Learning Component)*

Students attending school in the face-to-face component of the hybrid strategy would engage in Phase 2 of the FC model. Similar to the TFC model in the traditional classroom environment, classroom instructional design would allow students to engage in activities, authentic practice, or work through additional examples designed to increase comprehension around target concepts and skills. Teachers might also utilize in-class time to resolve student inquiry around pre-class content and/or address any collective gaps in student learning indicated by data collected through phase 1 assessment (e.g. quiz). Curriculum pacing would be established around a staggered instructional schedule so that virtual learning entails curricular antecedents to scheduled face-to-face (i.e. in-class) instruction.

*FC Model Under the Remote Learning Schooling Plan (Phase 1*Virtual [Pre-Class] Learning Component)*

Several strategies for Phase 1 direct instruction (i.e. pre-class activities) are possible under the *remote* learning plan. Traditionally, this instructional component is integrated into the homework structure of the traditional 5-day in-person format. In the context of the remote learning plan, educational leaders may (a) choose to assign pre-class activities as “homework” (i.e. outside of online school hours) for students, each day of the week or (b) conduct live classes 2 -3 days per week (i.e. Phase 2) and require Phase 1 engagement on remaining days of the week. Regarding the latter, a study conducted by Hironmoy et al. (2020) found evidence that students under the remote schooling alternative preferred fewer days of live instruction. Instead, students in the study indicated a preference for asynchronous learning using video recordings of the live lessons. Tso (2020) similarly found that most university students in her survey preferred use of a self-directed, online language learning application as a support for the learning process.

Applying this frame to the present study, teachers might elect to record online classes and post these recordings to the digital library for independent access and reference by students. This format would allow for staggered lessons like those described for the hybrid alternative plan, so that online class sizes might also be reduced.

Zheng et al. (2020) discovered that while it is important to create high-quality video content that promotes student comprehension, discussion forums and gaming opportunities aid in creating larger learning effects for students through increased motivation and collaboration. The mediating effects of social interaction to support student engagement in pre-class activities, like video-watching were also supported by outcomes produced from a qualitative study that found that students were less likely to watch instructional videos (especially lectures) in their entirety (Sammel et al., 2018). As reported by Sammel et al. (2018) incompletion was often due to reasons that included an inability to ask questions during the video lecture. This unilateral dissemination of information (i.e. direct learning) – for some students - paled in comparison to face-to-face formats, in which students were able to engage in two-way interactions during direct learning. As described above, the seamless flipped variants of the TFC model allows for two-way interactions between instruction and the learner (Çakıroğlu & Öztürk, 2017; Hwang & Lai, 2017), through use of programs, such as Edpuzzle.com, which provides checkpoint assessments of student understanding and immediate feedback for the user.

FC Model Under the Remote Learning Schooling Plan (Phase 2 [Virtual] Face-to-Face Learning Component)*

Concerns related to virtual instruction received in the remote learning environment include the need for children to socialize. Appropriately, proponents of the FC model advocate the importance of collaboration across the classroom space. This collaborative intent is transferred then across the virtual environment. While there are multiple online conferencing platforms to select from for online classes (e.g. Skype, Zoom, Microsoft Teams) educators should be mindful of features (or lack thereof) that allow for varying forms of interactions among teachers and students. Students should have the capacity to interact with their peers across the collaboration space to increase engagement, promote retention, provide a space for peer and instructor feedback, (Çakıroğlu & Öztürk, 2017; Chen & Chang, 2017), and reduce a sense of isolation. Koh (2019) drew special attention to the Phase 2 FC design that emphasizes increased collaboration, through the employment of in-class problems that require group (i.e. peer) work, as opposed to individual problem solving through additional practice problems. In the online classroom environment, this means that educators should ensure that online platforms have features that allow for large and small group collaboration. The free version of Zoom (2020), for example, has a feature called *breakout rooms* that allows the instructor to separate students into smaller conferencing rooms. This structure could be used around

collaborative projects or problem solving. Some research (Zante et al., 2020) has even suggested the role of peers as teachers in the group setting. This strategy finds support in Vygotsky's theory of the more knowledgeable other that guides learners through the zone of proximal development (Daniels, 2011; Ornstein & Hunkinks, 2017; Zante et al., 2020) towards target skills and concepts. This strategy could be easily accomplished by assigning peer leaders for each breakout team. Outcomes of a study, conducted by Bicen and Taspolat (2019) provided evidence of a favorable, collective disposition of students towards incorporating social media into the FC environment as a mean of increasing motivation and participation. This incorporation could be accomplished through use of public platforms, such as Twitter or private, profession-oriented networks, such as Edmodo (2020). The same authors also admonished the instructional designer to be mindful of the potential for distraction (e.g. advertisements), when using some forms of media (Bicen & Taspolat, 2019).

In her article on the pedagogical dimensions of Flipped Classrooms, Joyce Hwee Ling Koh (2019) presented a four-pillar theoretical frame for the examination and construction of FC design. Personalization, higher-order thinking, self-direction and collaboration are common attributes of the FC model that add value to the virtual learning environment. The model and its variants provide opportunities for students to engage in self-regulated, differentiated (i.e. personalized) learning framed within an iterative feedback process (Stanciu, 2016). Strategic planning to transition these benefits of the FC model to students enrolled under the hybrid or remote schooling plans, is incomplete without considerations of supports for the implementation process.

Supporting the Transition to the FC Model in Hybrid and Virtual Learning Formats

Contemporary research (Stanciu, 2016; Sun & Gao, 2019) has acknowledged the benefits of the personalized learning experienced often gained through the outcomes of self-directed learning, achieved through the FC model. Khan's belief that students should learn to teach themselves (Kurt, 2017; Stanciu, 2016) aligns with a common vision of many educational institutions that converge around the goal of producing lifelong learners. Self-regulation is a desirable learning outcome produced through implementation of the FC model that is readily accessible by educators across multiple teaching and learning environments.

In their discussion on the schoolwide implementation of the FC model supported by ICT, Sun and Gao (2019) emphasized the importance of a coherent vision and the distribution of the leadership shared across the organization. This shared leadership model allows for a loose coupling structure, in which teachers are granted permission to utilize discretion in solving local problems of practice (Hoy & Miskel, 2013) without fear of penalty from the organization. In this environment, where teachers are encouraged to take risks and explore as professional learners, these attitudinal tones will be extended

to student learning. In essence, as teacher-efficacy is increased, student-efficacy will follow suit (Hoy & Hoy, 2013).

The intent of gaining “buy-in” from teachers should be coupled with support for competence and increased professional capacity. Educational leaders should provide support for teachers to develop their confidence around the implementation of the paradigm. The FC model relocates teachers from the traditional lecture role to the facilitative role, as students take an active lead in their own learning. As such, teachers are simultaneously shifted into the role of active researcher and professional learner. Subsequently, teachers remain critical to the (flipped) learning process and should participate in ongoing, collaborative professional development around program implementation and continual improvement (Lew & Jeong, 2014; Sun & Gao, 2019). Ongoing improvements are both relevant and timely, and depend on the regular operation of evaluative activities, which ensure that implementation of the FC model is effectively progressing the school organization towards incremental, preset goals [e.g. increased professional capacity; student achievement] (Yarbrough et al., 2011). Budgetary supports should consider the financial requisites of the transition process (Sorenson & Goldsmith, 2013), which include professional development and evaluative activities. Time is an important resource that should also be recognized in planning for implementation. Educational leaders should provide time for students (Gomez, 2016) and teachers, as they develop competency around the use of information and communicative technological tools. Other researchers have also asserted appropriate time for implementation as a requisite for recognizing these transitional successes in student learning outcomes. Specifically, five to eight weeks of implementation and maintenance of the FC model were found to have the largest effects on student learning than comparatively shorter periods (Zheng et al., 2020). McPherson (2018) also confirmed time as a requisite as teachers adjust both their professional competence and perceptions of technology.

Educational leaders should expect some resistance (McPherson, 2018) and frustration (Martens, 2020) as teachers adjust to technological adaptations. According to McPherson, some teachers resist change related to technology, because they associate the technological changes with a loss of professional agency. Vu et al. (2014) found that some teachers, who preferred traditional, teacher-centered instruction found technology only somewhat useful to their teaching styles. Confidence may be increased over time, however, as teachers begin to realize the benefits of technology, as it relates – in this case – to increased accessibility to curricular resources, increased student interactivity, enhanced customization for teachers and students, and improved teacher-student relations (Martens, 2020, McPherson, 2018; Vu et al., 2014). Additionally, research (Çakıroğlu & Öztürk, 2017; Zengin, 2017) has encouraged leaders and teachers to ensure that students are allowed to regulate their own learning and to control the pace and volume of their learning. Returns for this investment of trust are often measured in terms of increased student confidence and student achievement. Additional supports include

the development of organizational policies to support learning around implementation of the FC model (Sun & Gao, 2019). Also, school leaders should ensure that both teachers and students have appropriate access to the tools and devices required for the virtual instructional context. Moreover, decision-makers should ensure that type of technology selected and utilized supports instructional intents (Vu et al., 2014) of the flipped learning environment.

While the expanding and dynamic domain of ICT provides an ever-increasing pool of resources to support school leaders and teams in transitioning instruction to hybrid and virtual environments, Basal (2015) encouraged the use of simple, technological tools. Other research (Chen et al., 2020) has drawn attention to the interactive capacity of programs that allow participants to utilize their own devices within the flipped classroom, such that motivation, engagement and comfort are increased. Decisions around the customization of the FC model should be based on the characteristics of the students (e.g. experiences, prior knowledge, ICT competency, cultural background; Zheng et al., 2010), teacher (e.g. professional capacity; Sun & Gao, 2010), technological and financial capacity (Sorenson & Goldsmith, 2013), and context of the school organization. Leaders should carefully plan for these transitions to the part-time (i.e. hybrid) or full-time virtual learning environment, ensuring infrastructural supports. Recent research has presented evidence of student frustration with sudden conversions to the online environment from the traditional setting related to internet connectivity, an inability to keep up with meeting dates, and a desire to return to the traditional classroom setting (Hironmoy et al., 2020). Educators should anticipate the role of collective frustration as students (and their families) grapple to cope with these sudden changes of the learning environment. Martens (2020) also cautioned against assumptions that students possess pre-existing technical competencies and suggested that students receive explicit instruction in the use of technological tools as a means to decrease potential student frustration and increase productivity. Martens extended this thought by adding that “guided freedom” should establish a balance between the level of explicit instruction and range permitted for student exploration of technological features. Some relief, however, is found in the outcomes of a metaevaluative analysis conducted by Zheng et al. (2020), which demonstrated that there is no statistically significant difference in learning outcomes produced among TFC and variant models. This finding greenlights the creative and responsive capacity of the instructional designers, when implementing the model. Instructional designers (i.e. teachers and educational leaders) are encouraged to design parameters of their learning environments that meet the needs of their learning community. As the education community continues to prepare for, engage and respond to a scholastic learning environment that has been flipped upside-down by events surrounding a worldwide pandemic, the FC model is positioned to meet the imminent needs of the multi-level, multi-disciplinary learning community and enhance educational outcomes.

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