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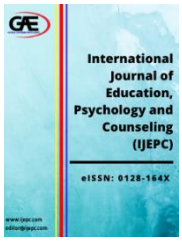

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A FLIPPED LEARNING ENVIRONMENT: A DISRUPTIVE APPROACH FOR TRADITIONAL CLASSROOMS?

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Abstract:

The primary purpose of this study was to examine whether a flipped learning environment was a disruption to the traditional instructional approach, particularly in consideration of the 21st-century skills that students must acquire before graduation. A flipped classroom is one in which students are introduced to content at home or outside classroom via technology, and practice working through it at school. A qualitative research design was employed to conduct the study through a focus group approach. Nine in-service teachers, who were participants in a flipped classroom pilot program in Malaysia, served on the focus groups. Data were collected through asynchronous virtual focus group discussions. The scissor-and-sort approach was employed in the data analysis process. Findings from the study indicated teachers believed that a flipped learning environment maximized student learning potential, allowed for collaborative learning, created an engaging learning environment and promoted higher order critical thinking and problem solving skills, all suitable for encouraging and practicing 21st century skills in the classroom. Therefore, this study showed that the flipped classroom approach disrupts the traditional learning environment in a positive manner and avails opportunities to equip students with the relevant skills of problem-solving, critical thinking, collaboration, cultural sensitivity, and creativity which are essential for life-long learning and participating in a competitive 21st-century learning environment.

Keywords:

Flipped Learning Model, Disruptive Pedagogy, 21st-Century Skills, Problem Solving, Higher Order Thinking Skills, Student Engagement

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Introduction

Research shows that the teaching and learning process continues to follow the traditional approach (teacher-centered) in this information era; even when the need to develop learners' critical thinking skills (through student-centered approach) should be the priority (Rateau et al,. 2015; Singh, 2020). This is partly due to teachers and instructors' inability to upgrade and keep up with the pace of developments in pedagogy and emerging technologies (Almodaires et al., 2019; Washington et al., 2020). In the information age environment, learning should not be solely teacher-centered (Steen-Utheim & Foldnes, 2017; Swapp, 2017). Rather, it should be meaningful learning experience (Sailin & Mahmor, 2018; Say & Yildirim, 2020) which embarks on employing practices and methods that stimulate higher-order level thinking, problem solving skills, self-regulation and social connectedness (Du, 2020; Jdaitawi, 2019; Lee & Lai, 2017;). These are some of the fundamental skills required by students for achieving success in their future workplace after graduation (Rateau, Kaufman, & Cletzer, 2015).

Current practices and studies to reduce dependency on the traditional teaching approach by using the flipped learning model are still few (Jensen, Kummer, & Godoy, 2015) but emerging and growing. Nevertheless, innovative educators continuously look for better methods of engaging their learners in the classroom and have started to employ flipped learning in the instructional process (Bacsich et al., 2013). For other educators and instructors, the inverted classroom approach or model (Alcaraz et al., 2020; Algayres & Triantafyllou, 2020; Deng, 2020; Jacques & Lequeu, 2020) as is sometimes called; is regarded as a viable alternative to the traditional classroom-teacher centered approach to bridge the gap between school and the home environment for students at all levels (Hamon, 2014).

Tremendous progress has been made in the field of educational research since the turn of the century. This has been driven by developments in technology, ideological revolutions, and the desire to advance pedagogy, resulting in innumerable changes in teaching and learning practices (Bishop & Verleger, 2013). One of the novel pedagogical developments is the flipped learning approach. A flipped classroom is one in which students are introduced to content at home, and practice working through it at school (Bergmann & Sams, 2012; Jacques & Lequeu, 2020; Tucker, 2012). In this blended learning approach, face-to-face interaction is mixed with an independent study via technology. Students watch teacher-selected videos at home. When they come to school, they do their "homework," armed with questions and at least some background knowledge (Aslan, 2020; TeachThought, 2016). In this arrangement, teacher-centred learning gives way to student centred activities where video-based online lessons enable students to review content and read assigned materials at home before turning up for face to face classroom activity sessions (Conner, Stripling, Blythe, Roberts & Stedman, 2014). The concept comes alive as a disruptive pedagogy where technology affordances are able to support classroom readings and resources while at home. The flipped classroom presents an opportunity with "better learning environments in which students can be more engaged, active, and responsible for their learning" (Kim et al., 2014, p. 38). The flipped learning model can assist in nurturing the 21st century skills of learners (Väisänen & Hirsto, 2020) through direct critical instruction, hence promoting critical thinking skills through reasoning, reflection, and sound judgment at both group and individual levels (Keane, 2014).

The flipped approach also promotes "meaningful learning" by encouraging problem solving (Anderson & Krathwohl, 2001; Diningrat, 2020; Nitko & Brookhart, 2007), which is the ability to identify and solve problems by applying appropriate skills systematically (TeacherVision,

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nd). Students need to develop the ability to apply problem-solving skills when faced with issues that are new to them, a frequent occurrence in this century's rapidly changing global, technological and educational environment (Väisänen & Hirsto, 2020; Keane, 2014). Problem solving provides students with opportunities to use the newly acquired knowledge in meaningful, authentic activities and helps them work at higher levels of thinking (Diningrat, 2020; TeacherVision, nd).

Disruptive Pedagogy

The original usage of the term "disruptive**"** was utilized in conjunction with technologies, but the concept was rephrased as a "disruptive innovation**"** (Christensen & Raynor, 2003) to embrace the broader notion of both the technology and its application context. Christensen and Raynor suggested that innovations were disruptive if they replaced a previous technology or the way of doing things. For instance, Demissie (2020) adapted a pedagogical approach meant for children to the higher education classroom for students' success. It is the relationship between new technology and ways of learning and teaching that makes pedagogy disruptive**.** These combinations of innovations and technologies enable alternative ways of learning and teaching that no longer require the industrial organization of the classroom wherein learning and teaching activities and processes take place in the school and are achieved through the teacher-centric control of pedagogy, knowledge, and technologies (Hedberg, 2011).

The flipped classroom technique is an innovative disruption for the established traditional teaching approaches. A flipped classroom makes student-centred learning a meaningful process, which is supplemented by emerging technologies, enabling students to construct knowledge in their learning process, communicate collaboratively, and build their understanding (Arnold-Garza, 2014; Diningrat, 2020). It provides students with real opportunities for sharing information and learning experiences, as well as sharing knowledge and making sense of the learning process (Bernauer, 2020; **Hussin**, Abdullah, Ismail, & Yoke, 2015).

Many educators do not fully comprehend the nature and benefits of flipped learning and the differences between it and a more traditional approach to teaching and learning (See Table 1). Thus, this article highlights some elements that benefit every teacher when undertaking this potentially disruptive pedagogical approach. It also shares some of the experiences of in-service teachers in flipping the teaching-learning process to enhance student engagement and advance overall academic performance (Bernauer, 2020; Say & Yildrim, 2020).

Objectives for this Research

This study was designed to examine whether a flipped learning environment was a disruption to the traditional instructional approach, particularly in consideration of the 21st-century skills that students must acquire before taking on the demands of a rapidly changing world and workforce. Hence three research questions were addressed in this study. They were 1) Why did teachers flip the teaching-learning process in their classrooms? 2) How did teachers undertake the flipping strategy? and 3) Were there any 21st century skills developed in a flipped classroom?

Theoretical Framework

The flipped learning model was developed in 2007 by two rural Colorado chemistry teachers, Jonathan Bergmann and Aaron Sams (Bergmann & Sams, 2012). They were looking for a

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practical means of disrupting the traditional instructional approach because they believed that the traditional approach was not inclusive and discerning enough to address the classroom teaching challenges, which they faced at that time. See Table 1.

Table 1. Flipped Versus Traditional Teaching Approaches

Flipped	Traditional
The teacher provides instruction for the lessons at home via podcasts /videos /websites /books.	The teacher provides instructions for the lessons at school, and students take notes.
Students work in class.	Students follow guided instructions, and the teacher gives an assessment.
Students receive support from peers and teachers.	Students have homework. Some students complete the homework. Other students cannot complete homework because they need assistance, and there is no one to help them out.

Source: Bergmann & Sams, 2012

On the whole, no single form of the flipped classroom exists. The term is generally used to describe almost any class structure that provides pre-recorded content, usually in the form of lectures or reading materials, followed by in-class activities (Chang, 2016). It is also known as a didactic approach (van Alten et al. 2020). In one instance, for example, learners could watch numerous bite-sized lectures of four, five, or even up-to-seven minutes each before turning up for a face-to-face classroom session. During the class session, the teacher employs active student engagement strategies (Vereş & Muntean, 2021). In the meantime online activities or quizzes could be prepared for students to demonstrate their knowledge from content learned. Providing instant feedback and allowing students to go over the learning material a few times as found necessary would simplify difficult pre-class learning material (Han & Klein, 2019). There are several Web 2.0 applications that instructors may use to prepare for pre-class contents such as Powtoon, Padlet or EdPuzzle (Mohammad Zain & Sailin, 2019).

Teachers might facilitate in-class discussions or turn the classroom into a studio in which students, individually or collaboratively, could actively engage materials and put into practice what they have learned from the videos that they viewed outside of class (Jacques & Lequeu, 2020; van Alten et al., 2020). In this approach, teachers serve as proficient educators, providing alternative ways of learning a concept, clarifying content, and monitoring progress (Altemueller & Lindquist, 2017). Sometimes, instructors could promptly set up workgroups to discuss complex concepts peers could be struggling to comprehend for a particular subject content. Thus, the strategy presents an all-inclusive approach to turnaround the learning environment for purposes of teaching and learning efficiency. Depending on each teacher's resources or creativity, he or she could decide to employ a few components of the model or to invert some identified content topics or learning periods during a term (Domínguez Romero & Bobkina, 2021; Flipped Learning Network, 2012). Therefore, the success of the flipped model

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depends on an individual teacher's ingenuity and the time and effort that can be devoted to the planning process. However, it is certain that this approach helps students to manage the cognitive challenges associated with the learning process (Petillion & McNeil, 2020).

The teacher's role include being a curricular designer, facilitator, instructor and media developer (Jang & Kim, 2020), allowing students to learn on their own in a stimulating and supportive environment. This enables them to assume accountability and responsibility for their learning (Bursa & Cengelci-Kose, 2020; Findlay-Thompson & Mombourquette, 2014; Herreid & Schiller, 2013; Sankey & Hunt, 2013) and gauge their progress in academic performance.

Methodology

A qualitative research design was employed to collect data from a pilot project based on the flipped classroom model. The study was designed to answer three questions. They included: 1) Why did educators /instructors decide to flip their classrooms, 2) How did they flip their classrooms? (How do teachers implement the flip classroom strategy?), and 3) What did they believe were the twenty first century skills nurtured in the learning process? Initially, the researcher identified two participants during a public event involving secondary school teachers at a higher educational institution in Malaysia. Through snowball sampling, the two subjects recruited other potential participants whom they knew as their colleagues in schools where they taught. They also, recommended others they had interacted with at educational seminars or conferences and were keen to take part in this study. A group of fourteen participants was mobilized for this study out of the twenty-seven in-service teachers who participated in a study of a similar topic but with different objectives for a pilot project for a Fundamental Research Grant Scheme, conducted in northern Malaysia between February and July 2019. Both notification and confirmation messages were sent to each participant explaining the details of the study. It was important to seek their reassurance on their part for this study. Those who consented to participate in the study replied in the affirmative while the others did not.

Finally, nine teachers were able to participate in the research, as the other five teachers reported that either personal or professional responsibilities had forced them to opt out of this study. Four group interview discussions were conducted (with each group) through a virtual forum (each group consisted of three teacher-participants). Nine teacher participants took part in the study. They were all graduate instructors with an education qualification. They were all high school educators specializing in different subjects such as; Science, English language, Geography and Mathematics. Out of the nine participants; three were men, and six were women educators. Their time in service ranged from 1-5 years (one participant), 5-10 years (four participants), 10-15 years (two participants), and more than 15 years (two participants). Table 2 contains a list of the participants, with gender, age, and discipline.

Table 2. Key Demographics of Teacher Participants for the Flipped Classroom

Participant ID	Age	Subject taught
Man 1	27	Mathematics
Man 2	44	English
Man 3	38	Mathematics
Woman 1	39	English

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Woman 2	40	Geography
Woman 3	50	English
Woman 4	52	Science
Woman 5	55	History
Woman 6	56	Mathematics

As Stewart and Shamdasani (2015) observed, individual differences and interpersonal dynamics of the focus group participants, as well as well as the interests of researchers were carefully addressed at the initial stages of the research. Kruger (1988), advised that focus groups should be planned at three levels; which include, 1) conceptualizing the process, 2) interview or actual discussion questions, 3) analyzing and compiling of reports. Therefore, at the conceptualization stage, the objectives of this research were formulated, a model of research established, and a design of research finalised (see Appendix A). An interview stage included developing actual discussion questions. This was done co-operatively with a group of senior in-service teachers who had applied the concept of flipping their classrooms since 2014. The questions were tailored to gather data in response to why, what and how as a means of probing participants for detailed discussions on the flipped classroom model.

For this research, group interview dialogues via discussion forum (i.e., written communication dialogues among research participants employed discussion forum supported by Google Groups platform) were employed to collect data. Throughout that period when data was being collected, researcher assumed the moderator's function. Researcher undertook responsibility to start and end discussion topics, threads or questions based on predetermined schedules agreed upon at beginning of the study. The researcher ensured that for every topic or issue discussed, a consensus was reached before its closure. This was to ensure that the discussion was exhaustive and thorough enough to yield reliable data for the analysis stage. Participants were encouraged to respond to the questions in a manner that allowed them to express their opinions in the best way and at an appropriate time before the agreed upon deadline. At the end of the data collection exercise, the researchers set out to download all dialogue-based group data onversations for the study. Ideas and themes reported from the study were a result of the data which was verified and analysed by the researchers throughout the data gathering process.

A shared Google document was used by the researchers and selected experienced faculty members to draft and design interview guide questions in a collaborative environment. Therefore, it was not necessary for a pilot study to be conducted to ensure the validity of the questions used for the study. The scissor-and-sort procedure, which is sometimes called the cut-and-paste method, is a quick and cost-effective method for analyzing transcripts from focus group discussions. It was applied during the data sorting and analysis process to code and assemble those sections of the focus group transcripts that were related to the research questions (Barkin et al., 1999). The report summaries from the data processing phase were jointly discussed again in the group's forum to ensure that the data statements presented were valid as intended by research participants for the study.

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Results

Findings from the study were based on the research questions as follows:

Table 3 outlines the main reasons for using a flipped classroom model.

Table 3. Reasons for Using a Flipped Classroom Model

Two Main Reasons	1.	Maximizing Student Learning Potential
	2.	Creating an Engaging Learning Environment

Reasons for Using a Flipped Classroom Model

Research participants outlined their varied reasons for using a flipped classroom approach for learning and teaching purposes. They all had unique circumstances, which motivated them to apply the concept with the hope of disrupting the conventional learning process for the benefit of their students. This disruptive pedagogy was meant to complement the traditional teaching approach so that students might break through the barriers to their academic achievement. Although teachers aimed to address unique challenges in the learning process, their efforts suggested the following themes as their common goals, which were 1) maximizing student learning potential and 2) creating an engaging learning environment.

Maximizing Student Learning Potential

In order to maximize students' learning potential, teachers had different approaches and reasons motivating them to employ the flipped classroom model. For instance, there were teachers who felt a need to determine the level of knowledge that students bring to a lesson. Said one participant, "Before conducting a class lesson, I am keen to assess the students' knowledge on the topic. So, I give them a simple activity to do at home and upload answers before coming to class." (Man 1, Mathematics). This helped him determine the point at which the lesson should begin in class.

Others flipped the classroom to give their students time to reflect on complex material. One participant gave students some mathematical problems to study at home. He asked them to formulate questions regarding the problems that they could not solve, individually or as a group, and post the questions on the mathematics class Facebook page (Man 3, Mathematics), to be later discussed face-to-face. The teacher said he was surprised that the most timid student, one who never asked or spoke up in class, posted good and constructive questions that surprised his peers, indicating that the flipped method allowed the reluctant classroom speaker to participate in the lesson and share knowledge with peers. Moreover, the at-home posting of questions enabled the teacher to have ample time to prepare and think through the answers before class time.

An English language teacher in the focus group said she had always had a tough time motivating students whenever they turned up for the English lesson. They were anxious and nervous about speaking this new language. However, she said that when she started uploading audio and video content for the lesson, in advance, on their class website (hosted in the Frog

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Virtual Learning Environment), student attitudes and confidence on the subject changed (Woman 3, English). Students, she said, became much more excited to talk about what they had listened to before coming to class. They were eager to pronounce the new English words in the lesson and also tried to impress their peers by the number of new vocabulary words that they had learned (Woman 3, English).

A Science teacher pointed to one student who frequently missed his classes for some unknown reasons. As such, he was always behind his classmates. With the flipped classroom approach, the teacher said, this boy was able to catch up, improve his knowledge of Science and "even completed his homework which never happened before" (Woman 4, Science). As a new pedagogical approach, this disruptive strategy provided the student with a conducive and socially but also academically motivating atmosphere, which enabled him to bridge the gap between home and school environments in order to achieve academic success.

Educators have come to realize that a one-size-fits-all approach to instruction does not work in a diverse classroom. This realization has led to the emphasis on differentiation, which means tailoring the instruction to respond to variance among learners in the classroom based on student readiness, interest, or learning profile (Tomlinson, 2019). Individualizing instruction may be difficult for the typically over-burdened teacher. However, according to the participants, flipping the classroom makes it easier to differentiate instruction. One said that flipping "allowed me to identify learner differences in terms of their styles, knowledge levels, and suitable instructional media" (Woman 5, History). Another teacher (woman 2, Geography) added that, with this strategy, she could provide each student with the content they needed, for example, additional explanations on aspects that were not well covered by the images and Google maps. This approach not only made students responsible for their learning but also saved teachers from wasting time and enabled them to utilize "teachable moments" for clarifying difficult to understand concepts for certain students (Woman 5, History).

Creating an Engaging Learning Environment

Teachers recognized that a flipped learning model disrupted the traditional classroom-based approaches and teacher-focused delivery methods. Learning sessions were turned into interactive and collaborative work groups. Students who never completed their homework because there was no assistance at home were now able to receive support and instant feedback from both their teachers and peers while completing their assignments in school. The flipped classroom model allowed teachers more time to engage their students in creative learning activities (Woman 5, History), which moved students from surface learning of facts into deeper learning of concepts. For instance, while commenting on her transformation of the classroom environment, one participant remarked: "Some students volunteered to engage in role plays in order to help peers understand the meaning of certain English adjectives" (Woman 3, English). The interactive environment motivated students to engage in academic conversations and constructive arguments, which enabled them to practice their English-speaking skills (Man 2, English).

The flipped classroom model disrupted the traditional teacher-centered approach by introducing a new learning culture revolving around the student. This disruption was evident, as classroom time became more engaging and fun. "A new learning culture is slowly but surely taking shape," said one participant. "…learning at school was a discovery journey meant to internalize subject matter contents via experiments which provided rich learning opportunities"

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(Woman 4, Science). For instance, the students had more time to discuss and understand how photosynthesis promotes a symbiotic relationship between plants, animals, and our real-life existence.

Generally, participants agreed that the flipped learning environment had resulted in a dynamic, collaborative, and interactive learning atmosphere where students were less worried about attempting to solve some difficult Mathematics problems or language activities. "There were no more complaints about work being difficult to complete," said one teacher (Woman 2, Geography). Another concurred, adding that "students completed tasks much more quickly and even yearned for more work" (Woman 4, Science). Finally, an English language teacher noted that the class seemed energized in the new environment. She noted, "class tasks triggered spontaneous conversations, newer vocabularies were being used with improved grammar, pronunciations and sentence structures" (Woman 3, English).

How Did Teachers Flip Their Classrooms?

Participants of this study had slightly different ways of flipping their teaching process. This was particularly evident in terms of the nature of subject content materials shared with students before the face to face class sessions were conducted. See Table 4.

Table 4. Ways of Flipping the Classroom Process

Ways of Flipping Classroom Process	1.	Creating and / or sharing video content of class materials before face to face class sessions
	2.	Creating and / or sharing audio content of class materials before face to face class sessions
	3.	Preparing and / or sharing reading material hand-outs before face to face class sessions
	4.	Creating and / or sharing video or audio content plus reading material hand-outs before face to face class sessions.

Generally, all the participants agreed that flipping the classroom required careful planning and preparation of the teaching and learning materials. This required more time and new skills. For this reason, some of the participants had to learn how to use unfamiliar technologies. They had to learn to use the software, such as Open Broadcaster, Screen Recorder, Selenium, and Camtasia for video recording, editing, and sharing purposes. Generally, the lesson preparation begins with an instructor recording a video to introduce a new concept. "I use a camera or any screen capture tool with a voiceover capability to explain concepts to be studied outside the classroom. This helps me to establish the connection and humour for setting the pace for my teaching" (Woman 6, Mathematics). Other teachers had to learn how to negotiate the Internet, find appropriate and available content online (sometimes modifying it), preview the content for suitability to their learning goals, and then share it with their students.

Sharing Video Content of Class Materials

As for the participants in this study, the most common way of using the flipped classroom approach was by creating their video content for their respective subjects. All of them utilized the Frog Virtual Learning Environment (VLE), a cloud-based virtual learning environment available to all Malaysian teachers at about 10,000 schools in Malaysia. The Frog platform

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made it practically convenient to upload and distribute video content to all their students, who were to watch lessons at their homes before turning up for the school session the following day. As the participants pointed out, "students choose their convenient time to watch the video at home" (Woman 4, Science) and then came to school ready to participate in a face-to-face discussion.

Sharing Audio / Video Content and Reading Material Hand-Outs

Several participants lauded the convenience of the new technique and technology: "For instance, students could watch the learning content on a smartphone. They could watch the material repetitively in order to grasp the historical concept' (Woman 5, History). Some other teachers uploaded recorded audio content or reading material hand-outs instead of videos. Depending on students' needs, a combination of video or audio and reading material hand-outs were also shared. One participant emphasized the importance of active engagement promoted by the technology-enhanced flipped classroom (Bernauer, 2020). "I want my students to practice learning the material and not just listening to me talk" (Man 2, English) before coming to class for the lesson activities, he said.

Were There Any Twenty-First- Century Skills Developed in a Flipped Classroom?

Participants in this study recognized the flipped classroom model as one of the most effective ways of enabling students to acquire 21st-century skills (Isabel Santos & Serpa, 2020; Väisänen & Hirsto, 2020). Precisely, they were of the view that this innovative strategy was suitable for promoting problem solving and critical thinking skills as well as collaboration, creativity and teamwork skills among their students as indicated in Table 5.

Table 5. Twenty-First Century Skills Developed in a flipped Classroom

Twenty-First Century Skills in a Flipped Classroom	1.	Problem Solving and Critical Thinking Skills
	2.	Collaboration, Creativity and Teamwork

Problem Solving and Critical Thinking Skills

One participant expressed her amazement at how the new approach had turned her classroom into a "problem-solving studio." She explained, "Students in my class have become problem solvers, discussing among themselves and exchanging ideas in order to find suitable solutions for geography tasks" (Woman 2, Geography). Students were now in charge of their learning; they did not depend on their teacher for finding answers to questions posed in their lessons.

Another participant explained that the new approach facilitated the adoption of the problem-based learning (PBL) strategy. This way, the teacher was able to introduce real-world scientific problems as a vehicle to encourage student learning of concepts (Woman 4, Science). Apart from enriching course content, this method can help to nurture communication and critical thinking skills, especially when students work in groups to brainstorm ideas and solutions for problems (Woman 6, Mathematics). About the classroom environment, another participant observed that "the problem-solving learning strategy presented enormous potentials for students to adopt an authentic approach to learning content while nurturing creative and required analytical skills" (Woman 4, Science). She added that this could be one way of

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preparing students for a more demanding life awaiting them in their communities and workplace after completing school.

Collaboration, Creativity and Teamwork

When commenting about students and their group activities in a flipped classroom, one participant explained that "my students are more logical and independent in their thinking" (Man 3, Mathematics), while another one interjected that "their creative and imaginative skills were demonstrated by their emphatic use of grammar and exquisite application of language phrases in their oral or submitted mini projects" (Woman 3, English). Another participant summed up her observations thus: "there is no more panic and desperation among learners as their collaborative approach and teamwork have made it easy for them to use web 2.0 tools in analysing geography activities and tasks" (Woman 2, Geography), with minimal dependency on the teacher.

Discussion

Research participants in this study opined that the environment provided an opportunity for secondary school students to understand the concepts better through an authentic learning process, as it allowed them to apply knowledge and demonstrate skills in the context of addressing challenges in their daily lives (Biggs & Tang, 2007). Furthermore, teacher participants observed that a flipped classroom model allowed learners to embrace social interaction (i.e promoting discussion and communication) via web 2.0 tools, such as Edmodo which facilitated the learning process (Nguyen et al., 2016; Kwon & Woo, 2018; Mohamad Zain & Sailin, 2019) beyond the classroom borders. Hence, they were able to express their opinions, views, or even share materials with peers and teachers to improve their learning process (Monalisa, 2013). Moreover, the flipped classroom model promoted student motivation and the development of self-regulated learning strategies (Du, 2020). This finding was supported by earlier literature such as Jwair (2018) and Sedraz, et al., (2018) who observed that improved self-regulation among learners in an inverted classroom was one of the main achievements for the strategy. Another study also supported this finding indicating that students demonstrated better self- expressions and ability to organize own learning materials (Du, 2020; Jdaitawi, 2019).

One of the notable findings from this disruptive but innovative approach demonstrated how students' improved engagement, attitude and performance (Strelan, Osborn, & Palmer, 2020) resulted into reduced absenteeism in class attendance. Previous findings have indicated that the flipped classroom model allows students to enjoy their learning experiences (Gilboy et al., 2015; Murray et al., 2015; Say & Yildrim, 2020). This was mainly through greater learning engagement (Alcaraz et al., 2020; Bernauer, 2020; Gilboy et al., 2015; Schimidt & Ralph, 2016) facilitated by an active learning environment (Bernauer, 2020; Diningrat, 2020; Isabel-Santos & Serpa, 2020) which "...opened up avenues for exploration and discovery through discussion" (Almodaires, et al., 2019 p. 19).

Due to its nature, a flipped learning approach can potentially transform students into highly self-sufficient individuals with the ability to engage in active learning, resulting in better academic outcomes (Kurt, 2017; Almodaires et al., 2019). This was mainly a result of lower stress levels in the flipped classroom environment (Marlowe, 2012).The flipped approach enabled educators and instructors to utilize time and space in a most effective manner (Li & Yang, 2021;Talley & Scherer, 2013) by creating a highly interactive environment with positive

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attitudes (Kostaras, 2017; Strelan, Osborn, & Palmer, 2020), one where learners excelled despite their individual differences regarding content knowledge, learning styles, or even cognitive abilities (Tung & Alissa, 2021).The flipped approach also allowed the teacher to establish an interactive and conversational atmosphere with an advantage of providing effective and objective feedback, resulting into positive feelings, comfort and creative learning ambience (Jang & Kim, 2020; Li & Yang, 2021; Singh, 2020; Webb et al., 2014).

Conclusion

The findings of this study showed that the flipped classroom approach disrupts the traditional learning environment in a positive manner and avails opportunities to equip students with the skills of problem-solving, critical thinking, collaboration, creativity, and teamwork which are essential for life-long learning and participating in a competitive 21st-century learning environment. The flipped classroom approach also enabled students to engage in both autonomous (Du, 2020) and collaborative learning experiences before (pre) and during the classroom lessons thus motivating and preparing the students to succeed in a competitive learning environment.

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