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The Flipped Classroom Opportunities within The Hybrid Learning Approach in the UAE

Tariq Abu Hilal*, Salam Hoshang, Hasan Abu Hilal

Higher Colleges of Technology, Abu Dhabi, United Arab Emirates, 41012

Abstract

Many higher education institutions are focusing on flipped classroom to gain the benefits that can be reaped for the institution, the students and teachers. The attractiveness of the flipped classroom is increasing, due to the Covid-19 situation and the promptly switch to the online teaching approach by many institutions. Based on the researchers' preliminary investigation, the utilization of flipped classrooms approach among educators is still not fully exploited. This initial and seed research aims to investigate students' and educators' point of view concerning the application of the flipped classroom concept. This qualitative research is based on interviews of focus groups, observations and mini structured surveys that aim to answer the main research question how the students and educator view flipped classroom. The researchers collected data from some 300 students and about ten educator form information systems and engineering disciplines. The research results reveal that students, as well as educators, are aware of flipped classrooms but more training in the tools and concepts of the flipped classroom is required. Flipped classrooms can bring enormous benefits to students, institutions and educators. The outcomes of this research work showed that students and educators prefer the flipped classroom approach in some aspects. In this paper, we provide and discuss the employment of the flipped classroom idea in a hybrid learning setting. We trust that this is an innovative learning strategy when the proper modern technology is utilized. Such as the utilization of smart gadgets to perform different tasks, like teaching, designing question bank, assessment of students, feedback…etc. We further focus on the use of information technology as well as the development of the course content. This paper provides a case study of hybrid learning flipped classroom at HCT. As the HCT is running completely hybrid in the last couple of years. As a result of this study in the United Arab Emirates, 62% of the teachers were comfortable with flipped classrooms.

Keywords: *Keywords: Flipped classroom, Online Education, Undergraduate Studies, Hybrid Learning.*

1. Introduction

Applying flipped classrooms in student-centered instruction has become one of the most innovative pedagogical approaches in today's education. This paper aims to investigate, demonstrate and address the issues of implementing the flipped classroom within undergraduate courses. This research focuses on the course content organization to be designed before, throughout, and after the class learning and assessments, built on learning objectives towards reaching varied levels of Bloom's taxonomy. In traditional educational classrooms, the learning process starts from the instructor to the student. During this process, many different teaching techniques can take place. Such as teamwork, think pair and share…etc. This process could be summarized and reflected in the "Teachers Do", "We Do", "student Do". That was the old school strategy of teaching for years. The flipped classroom approach skips the traditional ones. The sentence could also be read the other way around, as "students Do", "We Do", "teachers Do" instead. Take-home activities, review, and investigation took place in the classroom. Before coming to class, students participate in preparing work, including watching videos and animations, Teaching slides, text and other possible tools such as Nearpod or other interactive readings. After completing the pre-class work, students join the class well prepared in knowledge to start discussing, solving problems, analyzing text, or exploring solutions. The flipped classroom idea is fundamentally new in the teaching field as a pedagogy for teaching. However, the consensus view seems to be that the flipped classroom was partially deployed years ago by many teachers in a different way. But the deployment was not effective enough. This unsatisfaction could be due to the lack of educational technology at that time [1]. To sum up, the flipped classroom has been implemented by teachers from schools to universities. Similar to other approaches, the flipped classroom has a variety of ways to be deployed in the lesson teaching. According to [2] flipping comes from the idea of replacing

* Corresponding author. Tel.: +971566056677
Fax: +967122062545; E-mail: tabuhilal@hct.ac.a

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homework into classwork. As students go home to spend some time on homework, some of them have well-educated parents or elder relatives that can share knowledge with them with the work.

On the other hand, other students have parents that are not knowledgeable in the course subject and cannot assist them with their homework. Likewise, most of the students will be able to return to class with the content and then receive the necessary guidance with the homework from the subject expert in the content, mainly, by the teacher during class time. The flipped classroom rests on the assumption that the effort spent by the students on preparing the material will help them significantly in the class when they complete the work. The flipped classroom provides more time for self-paced activities as well as exercises and content review. The available evidence sounds to suggest that flipped classroom allows "students to take more concern for their own learning". Current education research seems to validate the view that the students about the access to learning resources. This possibility to access the resources will facilitate the learning for absent students due to illness or any other issue and will make it easy for the students to catch up and do not miss out on vital lectures [3].

One of the basic innovative approached to develop the teaching-learning process is the advanced teaching pedagogy. Hybrid learning has become a primary learning delivery method in the recent years. Basically, the face-to-face learning was the sole options to the students. However, the Covid outbreak made it a must to the universities to develop their own hybrid learning course. Hybrid Learning initially combines the face-to-face instructions with online learning. Such a tool would decrease the number of students in a certain classroom to minimize the risk of COVID spread. Information technology has become a primitive tool in educational learning system. The power of IT has created new learning community. This has transformed the learning environment space to an alternative virtual space that provides more flexibility for the students. Integration between IT and Learning became an interesting topic of today [4, 5]. Especially when the learning takes the best of both sides (face to face and online). In the current research, we looked in adept at the hybrid course that was characterized by online and F2F learning environment. The participants attended 2 hours on session F2F per week, and one session of weekly online discussion with some well-designed prepared material and assessment that satisfies the flipped classroom idea. The online sessions are held through SCMC synchronous computer mediated communication. Along with multiple assignments completed online as a part of a course multimedia, interactive online test. We were focusing on the individual's personality, intelligence, and learner scores and preferences, in previous research, the comparison would be between students who attended F2F sessions and those who made it online. However, in this study, we are using all for online courses as full F2F is something from the past now.

2. Literature Review

In the current research, learning is defined as an activity that students captivate in, to acquire knowledge and skills. There is an assertion that learning emerges in steps, and the new knowledge is built on content learned earlier. Instructors fulfil his/her role as a facilitator for self-directed learning rather than authority [6]. Self-directed learning, including individual, behavioral and environmental effects, pays to the development of undergraduate education [7]. The flipping method uses dedicated lecture video and activity-based classroom sessions to promote education for students, and it expressively improves students' knowledge [8]. The flipping method improves students' thinking and skills inside and outside the classroom, which involves students in their learning process vigorously through one-to-one affordability of mobile technology. Technology is the screen for information that allows interaction or communication. The use of open-source tools such as web 2.0 open-access collaboration co-authors and Fair Use Doctrine material such as online videos, delivers a student-centered learning setting, and students achieve a higher level of theoretical knowledge [9]. Other work addressed that student academic performance was perfected by the use of online videos in the classroom [10].

As the flipped classroom model arises, it improves teaching and learning processes, adds satisfaction in the development of the course, and enhances the academic performance of the students and the assessment of professors. In most of the educational research topics, student's achievements were analysed by an official survey. In other words, a questionnaire was created and validated. In addition to the surveys, interviewing the professors that organized the course content is crucial. The flipped model contributed to the enrichment of teaching and learning processes. The improvement of the processes of participation, communication and integration of the Information and Communication Technology tools, that improved the academic results and promoted the student interest in the course [11]. As an example of the discussion above, around 200 university students in Mainland China took part in 8-month College English flipped classes, from whom 75% valid questionnaires were obtained. The results were compared between several teaching models of Personalized Learning Climate, the learners' Prior Learning Experience was far more important regarding the student's satisfaction [12].

Further, students achieved an initial knowledge before the class to a high extent. Learners then applied that knowledge in classrooms through an active learning format. The researchers believe that the ideal study strategy is to match the time between of in-class session and the length of the pre-class video [14].

Another innovative modification to the flipped classroom, students in the teaching group deliver content to their classmates and organize classroom activities. Aafter class, students conduct

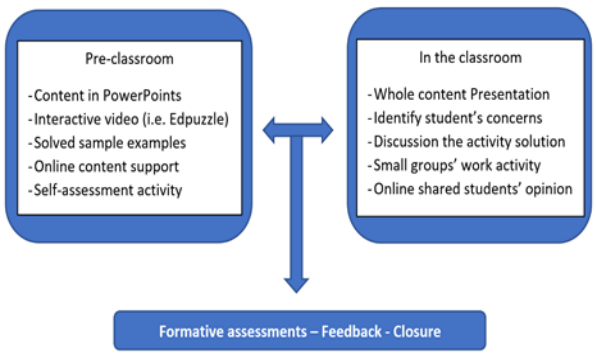

Fig 1. The flipped Classroom Model

The Impact of Technology in Flipped Classroom Pedagogy on Students' Online Learning Sessions					
Question	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
The method helped me to understand more	29.41%	52.94%	5.88%	0.00%	11.76%
I am able to comprehend lesson's topic	29.41%	47.06%	11.76%	0.00%	11.76%
I am able to learn on my own	23.53%	35.29%	29.41%	0.00%	11.76%
I am able to concentrate better during class sessio	17.65%	52.94%	17.65%	0.00%	11.76%
I am encouraged to participate more during class	17.65%	41.18%	29.41%	0.00%	11.76%
I am more motivated for the class sessions	11.76%	64.71%	11.76%	0.00%	11.76%
I am more engaged in the classroom happenings	17.65%	64.71%	5.88%	0.00%	11.76%
I enjoy the flipped classroom	11.76%	41.18%	35.29%	0.00%	11.76%
Technology is helpful, easy and useful for learning with flipped classroom	35.29%	35.29%	17.65%	0.00%	11.76%

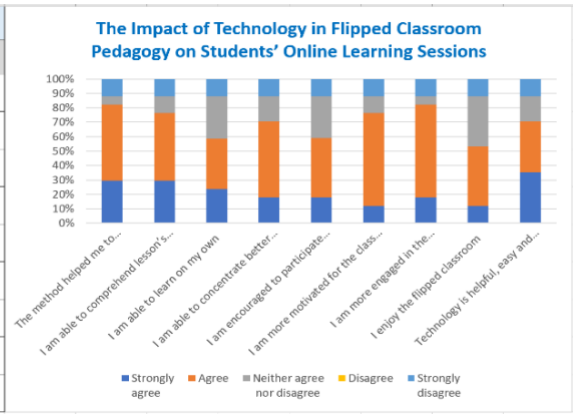

Fig 2. Students Responses

empirical research and complete research reports in groups.

Through qualitative and quantitative analysis, it was found that the modified flipped classroom can effectively bring out students' initiative and improve both their learning satisfaction [13].

Moreover, blended and face-to-face learning methods were compared to a flipped classroom that was conducted for various learning situations, the purpose was to identify the effect of these learning outcomes on students' achievements, engagement, satisfaction and feedback. Based on this aim, one control and two experimental groups were formed. It was observed that the assessment results for the students in the experimental groups according to their academic achievement and engagement were higher in the flipped classroom group. After analysing the results, the variations between the groups were obviously significant. It was disclosed that the students were also generally satisfied with the flipped classroom [15].

One more research was performed within an English course for one month time during the Spring term in 2017 at a secondary school in the city of Hatay; and the purpose was to study the effect of the flipped classroom model on students' classroom in learning English in regards of the level of participation and engagement. Teachers studied the use flipped classroom model to enhance classroom engagement that significantly yielded a successful understanding level [16].

Likewise, the flipped classroom switches the in-class time and out-of-class time to enable more interactions between teachers and students in the class. For example, it was mentioned that in a traditional classroom. These findings are very promising and provide insight into the implementation of the flipped classroom in the future. However, this research has quite a few drawbacks. Class time is mainly used for collaboration among the students, discussion, and personalized learning [17].

For the sake of the discussion of this research, we would like to emphasize that flipping the classroom doesn't mean not carry out lectures, or the class is totally flipped for every lecture. There is overwhelming evidence and research supporting the notation that the role of the teacher is still essential in the flipped classroom. For instance, the lesson plan and preparation have to be designed by the teacher for every class. The flipped classroom may also not require technology to use all the time, but definitely, the proper use of technology will support the teaching and learning process. Research by [1] put the claim that there are five critical tips for flipping your classroom: a) Don't get stuck on creating your own videos. b) Be smart about which parts of your class you decide to be flipped and at what time. c) It's recommended, find a colleague to create related videos. d) Address the matters of access initially. e) Find a method to involve students in the videos. Videos are very familiar training of teachers in implementing a flipped classroom. There are several ways to deploy those videos on the subject. However, a closer look at the literature, studies show that an approximately 15-minute video is an ideal length. There is growing support for the claim that multiple videos, tutorial and data resources on the subject matter from different sources are positively impacting the flipped classroom idea. This is referred to as the students' engagement. Videos from the same teacher can become dull and not joyful. Rejoicing, excitement, and pleasure in learning is the fundamental vision in the flipped classroom. Boring the students is a major influencer in spoiling the whole process. Along similar lines, watching the recorded class as a video or VPT (voice over power point) is a good boring example for many students. Therefore, students will get disengaged and most probably not going to watch them with their full attention [2]. It is very clear that the Covid outbreak changed the higher education system on every corner on earth. There has been a distinct shift in online instructions as an effort to stop the virus transmission. This unexpected quick change to online cause some instability on the internet and some electronic devices. This has also affected the outcomes. We are still uncertain about the future or any other possible second or third wave outbreak. And hence, as instructors we are required to consider the online instructions in the pedagogy. The main motivation in choosing the flipped classroom hybrid learning approach is to maximize the student's participation in the learning process. This relies on the premises the of the cognitive load theory. Which states that the no voice learners are overwhelmed by a large amount of new ides to surface learning. [18, 19, 20]. An online pre-class activity is designed to replace the homework and part of the lecture. Then the idea is to reinforce again the objectives through the next session of the online discussion.

3. Research Methodology

This initial seed research follows a qualitative and quantitative approach partially. A quantitative method was selected since it best describes the degree of students' acceptance or rejection of such an approach. Since the population views typically are not identical, quantitative methods can allow understanding the perception of the majority, their biggest concerns and the general

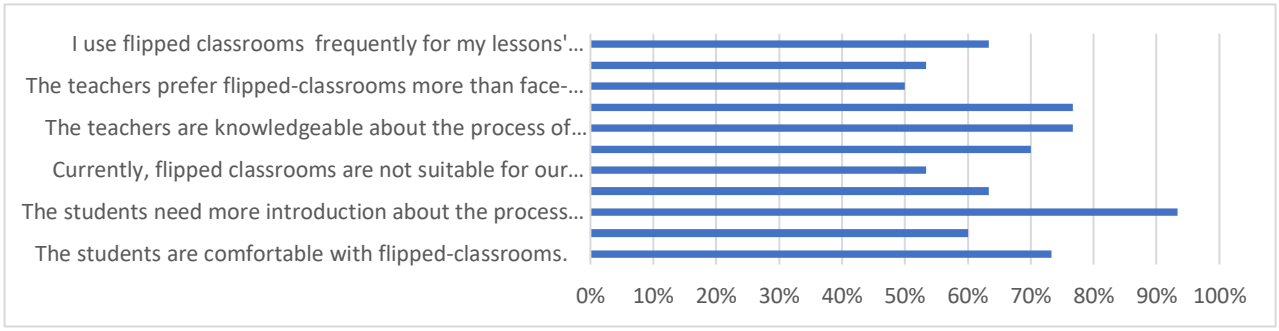

Fig 3. The Educator Point of View

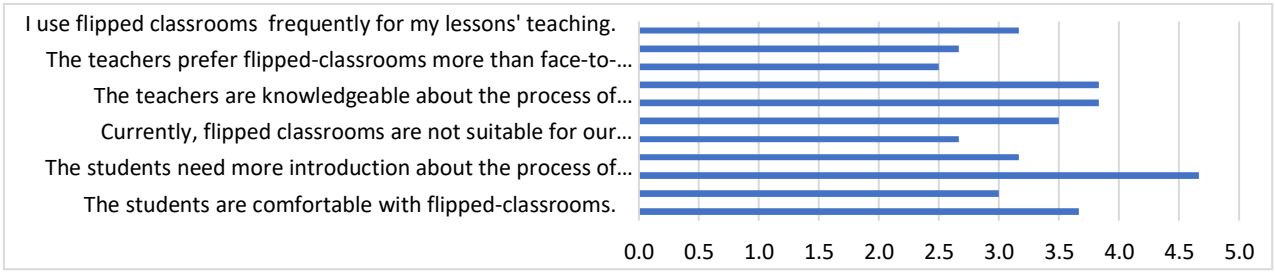

Fig 2. Educator Agreement 5-Scale

5= Strongly Agree; 4 = Agree; 3 = Neutral. 2= Disagree 1= Strongly disagree

level of technology awareness among the population. The quantitative approach also allows demonstrating the effect of some sub-factors on the overall result. Besides, the quantitative approach is usually straight forward to analyse and more comfortable for the respondents to answer [21]. For this research, Fig. 1, a structured questionnaire with mainly closed answer questions is used to produce statistical results that can be tabulated and analysed further, to reach to relevant conclusions. The qualitative approach is also used as it is helpful to have more understanding of the respondents' feelings and their general awareness about technology and flipped classrooms. It would be challenging to use the qualitative approach for a large sample that will represent the entire population. The qualitative approach can help to reveal inclinations in thought and opinions. It also can help to get a profound insight into the research environment. Additionally, it also helps in illuminating the experience and interpretation of the flipped classroom approach by the students and teachers which may have broadly conflicting incentives and roles; giving voice to these stakeholders will enrich the research results [22]. The other prominent research type is quantitative research. This is more data-driven research that uses surveys or questionnaires to derive numerical-based statistics or percentages [23]. The used "quanta-qualitative method" (QQM) [24], specifically, the research utilized small survey questionnaires and experiment-like activities as part of the question route in a series of different focused group interviews on the flipped classroom. Furthermore, focus group research was conducted conveying thoughts or feelings of the flipped classroom stakeholders. Interviews as another qualitative approach were utilized to collect the data. Thus, the primary data was collected through a survey; interviews focused groups as well as researchers' observation. The secondary data was collected from Journals, articles and textbooks. The research was conducted with undergraduate students.

Results Analysis and Discussion. The analysis of the results is categorized in two parts. The first part will discuss the students' view and the second part is from the educators' perspective. From students view the results in Fig. 5 show that 82.35% (which is equivalent to 4.12 on the Likert 5-scale) are either agreeing or strongly agreeing that flipped classroom supported by technology approach helped them to understand the class more as well as make them more engaged in the classroom happenings. 76.47% of the students either agreeing or strongly agreeing that flipped classroom supported by technology approach made them able to comprehend lesson's topic and were more motivated for the class sessions, (which is equivalent to 3.82 on the Likert 5-scale). The students respond of 70.59% either agreeing or strongly agreeing that flipped classroom supported by technology approach made them able to concentrate better during the class session. They are also the opinion that the technology is helpful, accessible and useful for learning with flipped classroom (which is equivalent to 3.53 on the Likert 5-scale). The other group of students of which are giving a cumulative rate of 2.94 in the Likert 5-scale which is below average agreement that they were able to learn on my own and were encouraged to participate more during class. And another below-average agreement flipped classroom make the class more enjoyable classroom. This result could also be based on the challenges students' face, such as heavy learning workload, and shortage of immediate support and less experience in self-regulated learning [25]. Other possible reasons could be that the students are not sufficiently prepared for the flipped classroom approach before the class session [26]. Some students wish to have the teacher to guide them step-by-step, not used to self-guided learning; they cannot get an immediate explanation from the teacher when needed. From the educator point in Fig. 3 views and based on the focus group discussions and an initial survey, the flowing results can be concluded. The teachers believe that the students are comfortable with flipped classrooms from 67% of the despondence. In regard to the statement "The students are knowledgeable about the process and the tools for flipped-classrooms" 51% of the teachers are agreeing to it.

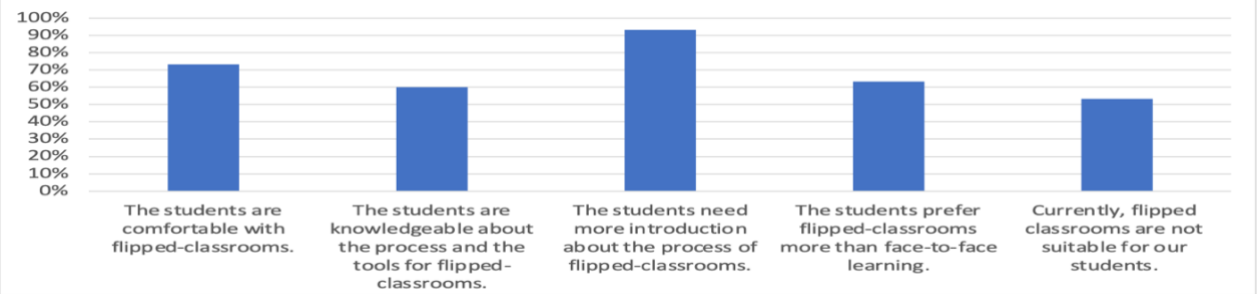

Fig 4. Educators Perception Regarding Students Perception

An impressive result of this research is showing that 89% of the teaching staff believe that the students would need more introduction about the process of flipped classrooms Fig. 4. Concerning the preference of the students, 53% of the teachers believe that the students prefer flipped-classrooms more than face-to-face in-class learning. This result is confirmed by the teachers, as 49% of them would agree that at the current time flipped classrooms are not suitable for the students. The fact that the teachers consider that the students are currently not ready as well as they would need more training for the flipped classrooms may also explain the low agreement that flipped classrooms are not suitable for the students at the current time.

In Fig. 5 results are determined based on the evaluation of the teachers' point of view and agreement concerning the flipped classroom. In total, there are only 62% of the teachers are comfortable with flipped classrooms. The sum of 69% of the teacher considers that the teachers are knowledgeable about the process of flipped classrooms. The proportion of 78% of the teachers agrees that teachers would need more introduction and training about the process of and tools for flipped classrooms. Less than half of the teacher (40%) would agree that teachers prefer flipped-classrooms more than face-to-face teaching; this means that the other 60% would prefer the traditional face-to-face in-class teaching approach. Also, almost half of the teachers (49%) would agree to the statement "Currently, flipped classrooms are not suitable for the teachers". Regarding using the flipped classroom concept, only 63% of the teachers are currently utilizing flipped classrooms in the lessons teaching.

From the focus group, discussion participants suggest that the flipped class model would be an excellent initiative to support online and remote learning. Still, the students would need some introductory training so they can get the fully reap the benefits of it in Fig. 6. Further, it is concluded that flipped classes would be more suitable for a theory-based lesson, and it would be challenging for practical and lab part of the lesson sessions. To provide immediate and individual attention would be missing there. Further from the focus group, many discussion participants indicate that students, as well as teacher, need more training and introduction about flipped classrooms. As well as many, some students still prefer face-to-face in-class learning. Additionally, it is identified that students also need to be trained about self-controlled learning approaches, time management and commitment to education. The flipped classroom model could be implemented in both online and face to face situations.

4. Conclusion Recommendations and Future Work

This study inquiries into applying the model of a modified flipped classroom by asking undergraduate students to read review content using various digital forms, and solve activities before class, make discussion in class, and conduct formative assessments after class, so that they can learn and understand the fundamental theories and practical parts in the field of learning sciences. The one-semester survey finds that applying the flipped classroom idea; there is more effort needed from both learners and instructors to formulate the materials before a session takes place in comparison to the traditional classroom model. The energy put in is rewarding as the flipped classroom model has been proven to increase the retention of knowledge learned and make valuable class time more worthwhile for learners. Overall, we can conclude that students in flipped

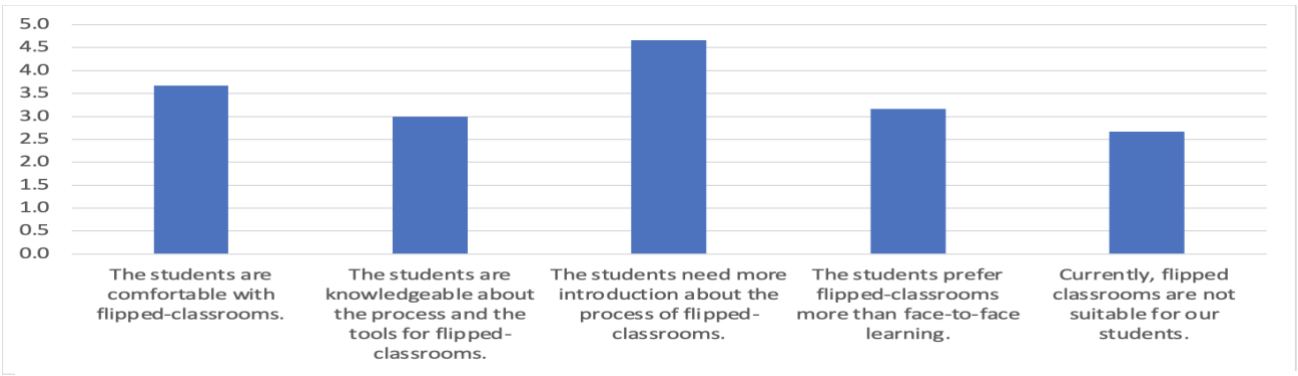

Fig 5. Educators Perception Regarding Students Perception Likert Scale

classrooms achieve significantly higher evaluated and assessed learning outcomes than students in traditional classrooms [12] and are equally satisfied with the learning environment. In this research, the researchers have discussed the views of the flipped classroom from two perspectives, the student and teacher vision. The researchers found that majority of the students and teachers support the use of technology in the flipped classrooms. Further, the researchers have also found that there is a significant level of discomfort among the teachers and students, as mentioned in [27], the negative effects of the flipped classroom.

More findings of this research that identified the level of discomfort and sort out list of possible points that caused it. Finally, we noted that teachers need more training and workshops to develop higher level of awareness on the flipping classroom. A future work of this topic is the use of virtual reality and 3D tools, where it will take a part of the flipped classrooms.

Based on the research results, the researchers recommend the followings. The students and some teachers may need to take training about the process of flipped classrooms. Students need to learn how to manage their time and show commitment to flipped classrooms. Educators may consider providing thorough guidance to students about flipped classrooms learning concept. Teachers may also ponder to utilize some of the various educational technologies that can help in creating trackable flipped classroom content such as EDpuzzle, Nearpod and Padlet. Also, there are different tools based on 3D, which will be discussed in the further paper, augmented and virtual reality as well as simulation, that can tremendously useful when teaching practical and lab-based subjects [28]. Education institutions may deliberate to provide orientation to students and training to some teachers that probably need it. Colleges and institutions may also examine to give some introductions to the tools and technologies used in flipped classrooms. Finally, the intuitions may provide awareness campaigns related to flipped classroom use and benefits to students and teaching corps.

Certain research focuses on applying AI as a supporting tool for learning. AIPRO [29] explores students learning spaces by using an AI model as a support tool. The tool predicts the students learning progress and provides guidance-based action sets to achieve the final goal. The AI model generalizes based on a supervised learning module that can capture profiles from multidimensional student learning domains and past progress on assessments. The tool applies a reinforcement learning model for incremental learning. The results show the promising applications of tools in higher educational spaces. [30][31] present an incremental learning model which applies Monte-Carlo simulations to develop a learning structure to represent contexts. Mobile devices can take the benefit of contextual models for solving real-world problems e.g customized learning. Context-awareness is also required for mobile to optimize contents representation and ease of doing learning based on the location, in addition to the emerging virtual reality approach [32].

Finally, one should remember that the instructor is to organize and conduct the content to hit the learning objectives the course [33]. It would be also great if the instructor takes the individuals level into consideration. And design the assessment accordingly. For example, our case at HCT we divide the students into groups and try to suppress the individual levels and make it flatter. This would achieve the DLPC (discover, learn, practice, and collaborate) criterion, and integrate the main pillars of the learning process (Instructors, Students, Assessments). Moreover, the students are currently not ready as well as they would need more training for the flipped classrooms may also explain the low agreement that flipped classrooms are not suitable for the students at the current time, where some of the students do not review the pre-given materials, which deteriorate the outcomes.

Finally, two more critical approaches can be explored like Emerging Technologies Applications [34] to be deployed in education and students' networks, in addition to the social behaviour [35] investigation to understand the learners in better ways.

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