Proposal of a Flipped Classroom Model Based on SPOC

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ARTICLE INFO	ABSTRACT
Published Online: 10 May 2022 Corresponding Author: **Ouariach Soufiane**	With the advent of blended learning, a new teaching method has emerged, the flipped classroom is a key component of blended learning and is currently attracting a great deal of interest from researchers and educators. The flipped classroom model involves the organization of an educational process in which classroom activities and assignments are reversed. The birth of the SPOC (Small Private Online course) in the field of education allows us to envisage new approaches and new learning contexts, and also leads to an entirely new working methodology. Combining a learning model based on the SPOC and the flipped classroom can help learners to be more involved in the subject and bring more interaction between the teacher and learners by providing a flexible and feasible model, the latter exploits the possibilities offered by modern technologies and offers many advantages to learners, among its advantages we find the collaborative work that is privileged with the construction of groups that encourage reflection, communication, cooperation, and mutual aid. In this model the teacher is not always physically present, the learner must have all the necessary information for a good exploration of the course.
KEYWORDS: Flipped classroom, SPOC, Blended learning, E-learning	

I. INTRODUCTION

The population is now fully computerized, smartphones, computers, and other electronic devices have been heavily integrated into consumers' lives. They have become a major tool for learners to acquire knowledge and skills. The flipped classroom pays great attention to the construction and use of the computer platform as part of the teaching and learning process and no longer considers explanation and demonstration as the whole of teaching as in the traditional classroom.

The rapid development of information technology has allowed the Internet to be used everywhere, including in the educational environment. Online learning offers flexibility and convenience. However, it is important to enhance the motivation of learners to continue learning in such an environment. Since the advent of SPOCs, much research has been conducted on reforming the instructional model. This gives rise to multiple new teaching models, such as the flipped classroom,

which is structured on constructivism (in class) and behaviorism outside of the classroom [1], flipped classroom practices are consistent with Bloom's taxonomy, the idea is to shift lower thinking skills such as memorization and comprehension in the form of videos and reading as pre-class activities that require less time and spending more time on

higher thinking activities such as application, analysis, evaluation, and creation in the form of individual and group-to-group engagement interactions that promote critical thinking and knowledge application [2]. The combination of SPOC with the flipped classroom model provides several benefits to learners. First, the videos provide learners with greater flexibility; they can watch their content at their own pace and review it as many times as they wish. This combination has several advantages for teachers as well since the use of online content will allow them to apply the flipped classroom model so they can better assess how learners are following the subject matter and offer them tasks to concretely test their acquired skills.

In this article, we propose a new model of the flipped classroom based on the SPOC. This new model has many advantages for teachers, as the use of technology will allow them to apply the flipped classroom model. Teachers will be able to better assess how learners are following the learning process and provide them with tasks to actively test their learning.

II. STATE OF ART

1. Flipped classroom

In the traditional classroom, there is little communication between teachers and learners, and learners' initiative before,

during and after class cannot be fully stimulated. In addition, teachers do not know much about the learners' learning status because of the lack of communication. In 1996, Mazur opposed the use of lectures and passive students in the classroom. He used a technique called "Peer Instruction" to change the traditional teaching model. He asked his learners to prepare for class by reading assigned materials so that they could actively engage in the learning process with their peers [3].

This pedagogy incorporates a range of learning strategies, including blended learning, just-in-time instruction, and active learning. Contemporary educational research has consistently shown that if learners are allowed to preview key concepts before the course begins, the face-to-face session can be used more effectively for active learning where concepts are analyzed and applied [4].

They use the class time to do the more difficult work of assimilating this new knowledge, perhaps through problem solving, discussion, or debate. In terms of Bloom's taxonomy [5], this means that learners carry out the lower levels of cognitive work (knowledge acquisition and comprehension) outside of the classroom, and focus on the higher forms of cognitive work (application, analysis, synthesis, and/or evaluation) in the classroom, where they receive peer and teaching support. An effective flipped classroom is one in which time normally spent on lectures is used for in-class activities, discussions, problems, and group projects. The most significant learning in a flipped classroom is the result of the effective use of extra class time [6].

2. SPOC

SPOCs were invented to succeed where MOOCs failed, namely, in the high dropout rate [7], it is a private online course in small groups, it is a new hybrid model that uses the resources of MOOCs, it can be used in different ways, including as alternatives or complements to face-to-face training, it is a multi-channel digital environment, including video conferencing, assessment, and forum [8]. SPOCs are a branch of MOOCs (Massive Open Online Courses), defined as "SPOC = Classroom + MOOC" [9], compared to the traditional mode of teaching, SPOC allows learners to have flexibility in time as the latter limits the number of learners so that teachers can devote more energy to learners. Armando Fox believes that SPOC is a supplement to classroom teaching and can improve the effectiveness of classroom teaching but it cannot completely replace classroom teaching, when MOOCs can improve the use of teachers, increase the performance of learners, improve their learning ability and participation in studies, this model can be called SPOC [10]. At this level, SPOCs focus on small groups of learners, qualified to take the course and willing to interact with others throughout the learning process. In this way, the number of participants and the high drop-off rate that is common in a MOOC course is reduced [11].

3. Blended learning

Blended learning is not a new term; the concept of blending is prevalent in learning experiences and environments abroad and at home [12]. The integrated combination of traditional learning with web-based online approaches" [13]. Teaching the online part of the course is usually done through learning technologies, usually involving a virtual learning environment (VLE) such as "Blackboard" or "Moodle" and including the use of synchronous and asynchronous electronic tools, such as "chat" and "bulletin boards" respectively.

BL allows multiple forms of communication between learners and teachers. The integration of traditional classroom and online learning promotes asynchronous and collaborative learning among learners. It also promotes the level of interaction between teachers and learners [14]

Another popular approach to blended learning is the flipped classroom. This approach also involves combining online learning activities with traditional face-to-face instruction, but with a more explicit purpose for both types of learning activities. Knowledge is often transferred from outside the classroom through online technologies, and then learners internalize that knowledge in the classroom through various interactions with the teacher or their peers [15]. The combination of face-to-face instruction and online learning allows learners to choose where they study (at school, at home, or somewhere in between) and when they study (during school hours, in the evening, or on weekends); but it is still the teacher who decides the extent of the choice, as well as which elements of the learner's learning are done online and which are done in class [16].

III. DESIGN OF THE FLIPPED CLASSROOM MODEL BASED ON THE SPOC

The new concepts of SPOC, flipped classroom and blended learning have highlighted the drawbacks of the traditional classroom - it focuses only on classroom activities, which makes the teacher ready to reform. SPOC is an effective platform to establish a flexible learning environment for learners who can choose when and where they learn so they can set their learning schedules under the guidance of teachers to find an individualized learning method suitable before and after the class [17].

The flipped classroom model uses innovative techniques such as LMS platforms to implement it. The concept of blended learning and the flipped classroom specifically involves the three activities that are both self-contained and complementary.

Therefore, to better cultivate the quality of self-directed learning among learners, our models are well suited to meet the pedagogical requirements of blended learning and offer learning activities divided into three parts : pre-class, in-class, and after-class.

Our first model consists of a shift from distance to face-to-face, and places the teacher in a position closer to the role of

mediator. The teacher teaches the principles and the different notions to the learners, providing them with examples or counter-examples depending on what is being taught, and then places them in a context where they can apply these notions to their learning. The second model consists of moving from face-to-face to distance learning, placing the learner in a situation of creation and discovery and allowing him to deduce rules, thus placing him in a situation where he decides to appropriate by himself or in cooperation, through exploration or observation, what he must learn. The teacher thus plays the role of guide.

1. Flipped classroom teaching model from distancial to presential

The pre-class phase is the knowledge transmission phase of this teaching model. The learners have to pass a pre-test so that the teacher understands the different difficulties and gaps encountered by them, he prepares teaching resources in advance so that the learners carry out independent learning at home. During this phase if learners encounter problems or questions, they can communicate with teachers and other learners through a discussion forum, the latter can give learners useful feedback to guide them through the learning process, collaboration fosters community and relationships among learners, which helps create a sense of belonging and motivation, and can also reduce the involvement of inactive or passive learners by encouraging learners to reflect and act. \In the classroom, this is the knowledge consolidation phase of the learning model and aims to ensure that learners have

fully mastered the knowledge. The teachers encourage collaboration and communication between them, firstly the teacher balances the problems collected in the pre-class phase and guides the learners in their learning process, the aim is to get the learners to discuss together and create a competitive spirit. In the second stage, learners are asked to exploit the content of the online videos in problem-based activities and produce textual or oral responses, with the teacher adjusting the activities or providing assistance as needed, in order to optimize the time spent in class by allowing learners to build their knowledge on their own and master the required skills. These learner-centered activities strengthen their problem-solving skills and promote their interest in learning.

After class, this is the knowledge improvement phase, to help learners recap and enrich their new knowledge, the teacher encourages learners to discuss among themselves, and the teacher can maintain interaction with learners if they still have problems. To assess whether the learners have benefited from the learning, they are called for a post-test to determine how well the learner has mastered the knowledge acquired, a complete success in the post-test means that the learning is qualified and it had a great impact on them and that the learners have the necessary skills for the next activity if not, the teacher modifies his pedagogical practice in order to get closer to the needs of his different learners and in this case, remediation comes into play to deal with this step by supporting the learners in difficulty in order to help them overcome their lack.
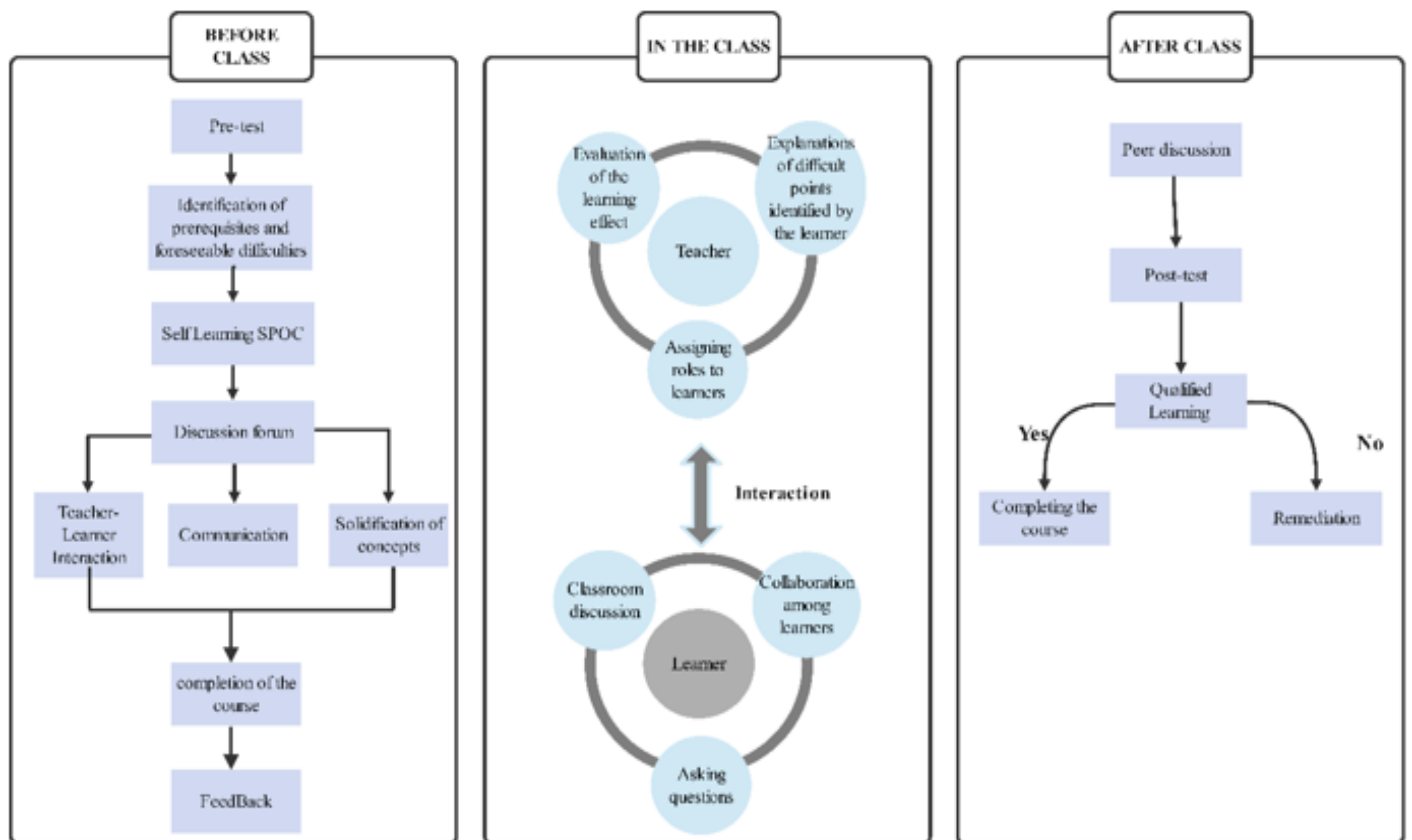

Figure 1 : Flipped classroom teaching model from distancial to presential

2. Flipped classroom teaching model from presential to distancial

The pre-class phase is the knowledge transfer phase, a pre-test is essential in this phase so that the teacher understands the different difficulties. For the learning situation, the teacher explains the course by providing examples and counter-examples. This process moves the learner from a passive to an active state, it places the learner in front of a series of examples that they have to memorize, from which they have to analyze the given examples and try to think and formulate a rule based on the different examples.

The teacher suggests active learning to create a collaborative environment to guide the learning process. This type of environment requires learners to think critically about the example being discussed and develop collaborative learning habits by acquiring synthesis skills. Learners can ask their classmates or the teacher for follow-up or clarification, if the examples do not impact the learners, the teacher must invent more and more examples, allowing learners to connect new examples to old ones to build their rule on the topic and to formulate arguments to support their opinions or requests.

In class, via a synchronous collaboration tool, including a video-conferencing solution, the teacher offers learners different types of activities, he intends to help them comprehensively practice the rules. The teacher starts with supervised activities or until the students master the rule. Next, the teacher provides rule-familiarization activities in which learners can express themselves using the learned procedure. Throughout this phase, the teacher assists learners by making corrections as necessary. The key is that learners are actively engaged in the learning process by completing activities, using their problem-solving skills, and testing their rules, this engagement has the effect of consolidating the learners' skills through a better understanding of the concepts taught.

The after-class phase will be face-to-face, where the teacher will encourage learners to debate with each other and maintain interaction with the learners. To assess whether learners are benefiting from their learning, they are invited to take a post-test to see how well the learner mastered what they learned. A complete success on this post-test means that the learner is considered qualified and that the learner has the necessary skills for the next course. If not, the teacher modifies his or her teaching practice to be more in line with the needs of individual learners, in which case remediation consists of addressing this situation by supporting struggling learners to help them overcome the gap.
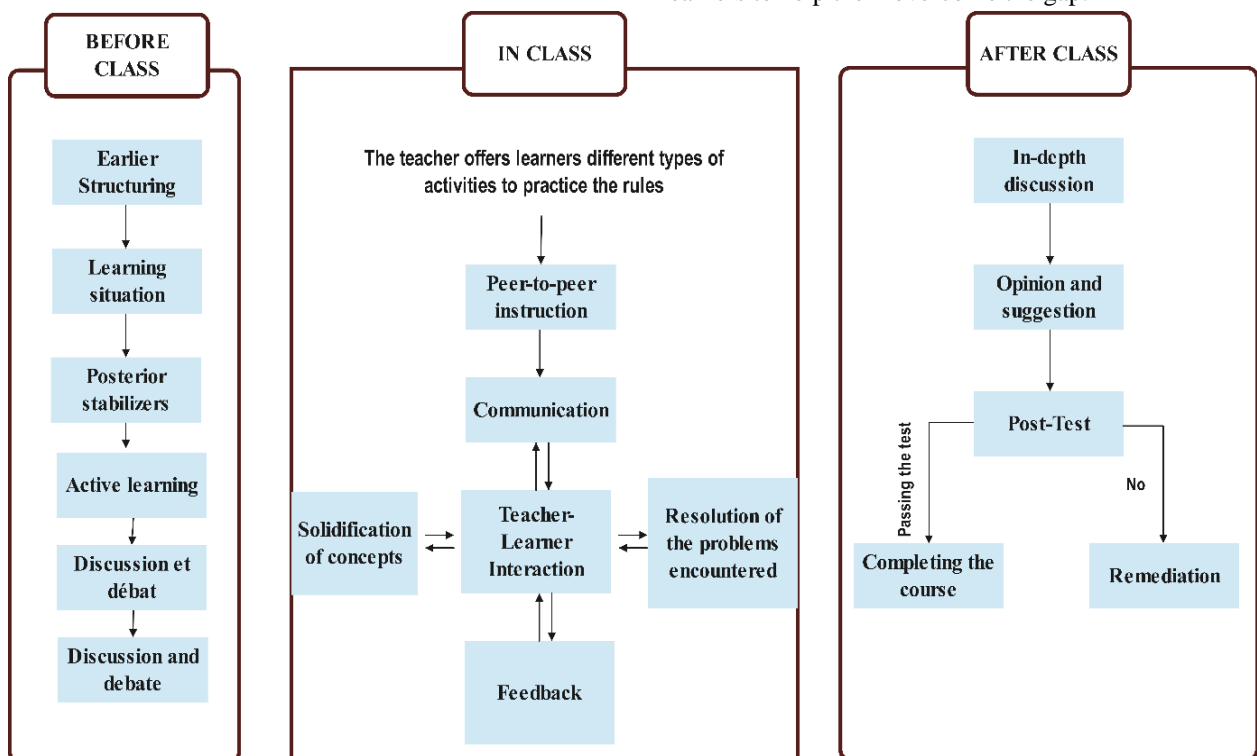

Fig.2. Flipped classroom model on the spoc from presential to distancial

V. CONCLUSION

In conclusion, in this paper we have proposed two models of the flipped classroom based on the SPOC, In addition, we have designed a learning paradigm "transmission phase before class, consolidation of knowledge in class, improvement of knowledge after class", in which the SPOC has become a combination of online learning and traditional classroom. Our models are pushing teachers to reflect on their practice and rethink how they reach their learners. It challenges teachers to change the way they have always done things and motivates them to integrate technology so it offers learners the highest probability of learning and building their skills more effectively. In conclusion, the flipped classroom model based on SPOC is more flexible than the traditional model in terms of enriching learners' deep knowledge and developing their multi-tasking ability, which concretely

improves teaching quality, learning achievement, and learners' serenity.

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