Blending Synchronous and Asynchronous Learning: A Review of E-Learning at Light International School, Mombasa

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Abstract
The purpose of this study was to review synchronous and asynchronous e-learning at Light International School. The study found out that the school as a hybrid or blended model e-learning model. The school used both synchronous e-learning which was done through Zoom Cloud meetings and asynchronous e-learning using Firefly Learning Management System (LMS).
Key words: Asynchronous, synchronous, E-Learning, Light International School
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1.0 Introduction and Background

Emerging technologies are taking over traditional classroom that has seen new learning system emerging. Several scholars have different semantic definition to this new learning system with different names being used synonymously to describe it. Several names such as remote learning, E-learning, online learning, online teaching virtual learning environment have been used to describe the new learning system that is driven by technology.

For the purposes of this article, the term e-learning will be used to refer to virtual learning environment that replaced traditional classrooms in some schools due to Covid -19 pandemic in the year 2020. According to Oxford Dictionary E-Learning refers to learning that is conducted through electronic media typically on the internet. E learning can also be defined as learning that makes use of electronic technologies to access educational curriculum (elearningNC, 2020). E-learning is divided into two learning approaches; synchronous and asynchronous.

Synchronous e-learning is more commonly referred to us live-online teaching that is teacher-led and taken at the same time as other learners although geographically dispersed (elearningNC, 2020). It usually uses web conferencing that allows learners to chat, electronically raise their hands, and can make screen annotations among others. Asynchronous e-learning is self-paced where learners are able to complete given tasks on their own without attending live-online classes. Asynchronous e-learning can be carried out online as well as offline because coursework is posted on online forums and online message boards (Mindflash, 2020; Toy, 2020).

1.1 Objectives
1. How synchronous e-learning is implemented at Light International School, Mombasa
2. How asynchronous e-learning is done at Light International School, Mombasa

2.0 Literature Review

2.1.1 Synchronous e-learning
Synchronous e-learning involves live-online learning that is teacher led and supported by chat rooms. Students can ask questions among themselves or directly to the teacher. The students also receive immediate feedback (www.easy-lms.com). According to Gardiner (2020), synchronous e-learning is supported by video conferencing such as Zoom, Google Meets, You tube Live among others. Synchronous e-learning also allows the teacher to replicate some aspects of the traditional classroom such as interacting with the learners, question and answer sessions, discussions and electronically raising hands. It is particularly useful when the teacher wants to provide feedback or clarification and respond directly to students' questions in real time or virtual space. It also allows students to see each other therefore easing the sense of isolation experienced by students therefore building on social element (Gardiner, 2020).

2.1.2 Asynchronous e-learning
Asynchronous e-learning is carried out online and offline. The subject material or content is posted on online forums or on Learning Management Systems (LMS) (www.easy-lms.com). Asynchronous e-learning is beneficial if students cannot be available for scheduled live-online classes as it can be done offline. The ability for students to learn on their own gives them the opportunity to explore course work materials, recorded lectures, quizzes at their own pace but with a lot of depth. Asynchronous e-learning provides a platform for self-directed study among the students. Consequently, asynchronous e-learning builds on constructivism theory and teaching pedagogy because students are able to construct own knowledge through the self-paced in-depth study.

3.0 Synchronous e-learning at Light International School, Mombasa

Synchronous e-learning as already defined refers to live-online classes that are supported by video- conferencing, chat rooms among others. In synchronous e-learning, the teacher and the students attend the scheduled lesson at the same time although geographically dispersed. There are several video conferencing tools that can be used in synchronous e-learning. Among these, include Zoom Cloud Meetings, Google Meets, Cisco Webex Meetings, Dingtalk, Lark, Microsoft Teams, and Skype among others.

Synchronous e-learning at Light International School, Mombasa was implemented through Zoom Cloud Meetings. All subject teachers generated Zoom meeting links that students used to join live-online sessions every day. These live-online lessons ensured teachers give feedback or clarification; introduced new concepts before students move to asynchronous e-learning. As noted in figures 7, 8, 9 and 10, teachers shared Zoom links on WhatsApp Class groups for students to join live classroom sessions while other students accessed the teachers' zoom links on Firefly learning management system (LMS).

Zoom lesson observations reported that all students' cameras were on to create a virtual learning environment where students could hear, see and communicate with the teacher or each other. This replicated the interactive nature of traditional classrooms because the live-online video conferencing enabled the teacher to communicate with students and use question and answer sessions as formative assessment. The teachers are also able to give detailed explanations of the topic.

The chat feature in Zoom provides the learning opportunity for the students to ask questions or respond to questions asked by the teacher during the live-online sessions. The chat room option in Zoom is a key feature of synchronous e-learning because it allows for collaboration among students and the teacher therefore making the lesson interactive. In a few classes, the teachers used the chat feature to share Quizziz link, google forms for students to respond to live-online questions about the topic of discussion.

Screen sharing feature in Zoom live-online lessons replicates one aspect of traditional classroom. Teachers can share their screens or whiteboard and use it to make annotations just like a traditional classroom where they write on the whiteboard or the chalkboard. The teachers were able to share their screens and using graphic pen tablets or screen annotations they make synchronous e-learning more interactive by doing numeracy calculations, write short notes in real-time among others.

3.1 Asynchronous e-learning at Light International School, Mombasa

3.1.1 Firefly LMS

According to TBS (2018) asynchronous e-learning occurs through online or offline channels without real-time interaction. Asynchronous e-learning allows the teacher to provide materials for reading, video recordings for viewing, notes for reading, tasks for completing, and exams for evaluation, the students have the ability to access and complete these requirements within their own flexible time frame. Learning Management Systems (LMS) both open-source and cloud-based allow the teachers to effectively implement asynchronous e-learning.

Pappas (2014) listed the following LMSs; some are open-source while others are cloud-based.

Table 1: Learning Management Systems: Open-source and Cloud-based				
1. Adobe Captivate Prime	2. Inquisiq LMS	3. Looop	4. Skillcast LMS	5. Chamilo
6. Docebo	7. Mindflash	8. 360Learning Engagement Platform	9. EduMe	10. Open edX
11. SAP Litmos LMS	12. iSpring Learn	13. Coassemble	14. Agylia	15. Totara Learn
16. LearnUpon LMS	17. TalentLMS	18. CoreAchieve	19. Moodle	20. Canvas

Firefly LMS was used at Light International School, Mombasa. Firefly is an LMS. Firefly was founded by two GCSE students, co-founders Joe Mathewson and Simon Hay, who developed the first version to help their teachers and fellow students have access to school information online and out of the classroom (https://fireflylearning.com/). The Firefly learning management system makes it possible for asynchronous e-learning environment because it has features that support offline and online learning. Firefly is cloud based learning management system.

According to figure 1, teachers' dashboard on Firefly LMS has resources, planner, tasks, set a new task, mark book, announcements and messages board among others. These features ensure that teachers are able to implement asynchronous e-learning using Firefly LMS.
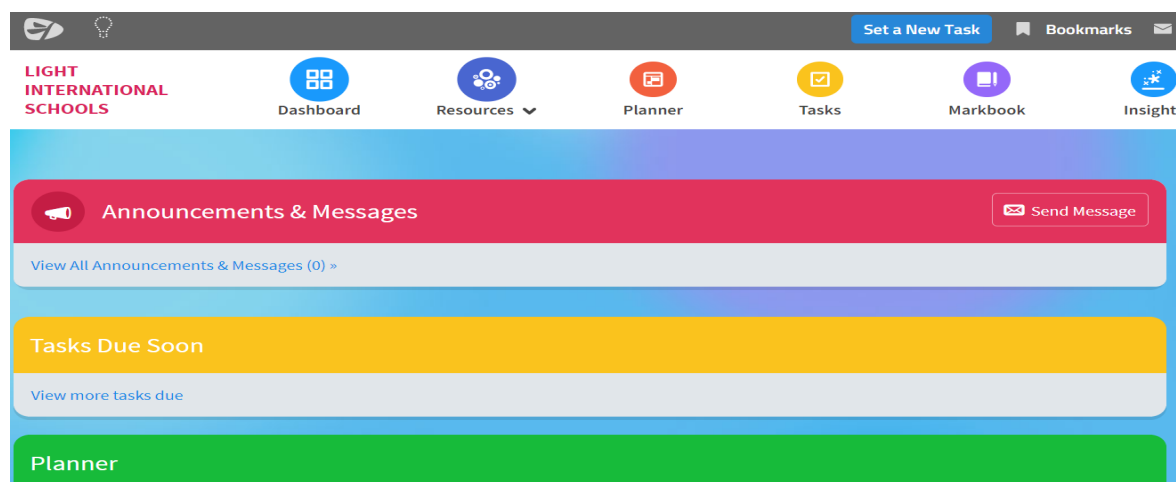
Figure 1: Firefly LMS Page

Firefly LMS, has an inbuilt feature that teachers use to set new tasks, mark and send feedback to all students who complete the task. The set tasks are completed by students when they log into Firefly at their own time therefore making it self-paced. As shown in figure 2 below, subject teachers use Firefly to set tasks, mark and provide feedback to all the students based on the tasks done. As reported, the tasks are done at the pace of the learner and makes submission when the task is completed.

Figure 2: Sample of Firefly Tasks

The resources feature makes it possible for teachers to create pages that students can read before completing the set tasks. Teachers use the resources feature to save synchronous e-learning lessons that have been recorded for students to access them at their own pace. As shown in figure 3 and 4, teachers use the resources pages to save reading materials and recorded lessons for students to go through at their own pace and time. Figure 4, shows recordings of synchronous e-learning done and saved on weekly basis for students to access them. Therefore, students can access recorded synchronous lessons through Firefly LMS.

Figure 3: Firefly Resources Page

Figure 4: Firefly Resource Recordings

3.1.2 Mathletics

Mathletics is part of 3P Learning, a global educational software provider. Mathletics is a cloud-based learning management system that Light International School, Mombasa uses to offer asynchronous e-learning. Mathletics helps children to enjoy maths and improve their results. Mathletics is divided into two main sections: live Mathletics and curriculum activities. Each student has login credentials: username and password that they use to access tasks under curriculum activities set by the teachers or compete in live Mathletics. The students have the option to participate in real-time, live networked mathematic competitions known as *Live Mathletics*. The main objective is to win by completing as many addition, subtraction and multiplication problems as possible before the one-minute timer elapses. Table 2 below shows teachers who set or assign numeracy tasks for each class

using Mathletics at Light International School, Mombasa. Students are able to login and do numeracy tasks or play numeracy related activities at their own pace and time. The Mathletics learning management system provides teachers with detailed reports on performance and achievement areas of each student with a view to improve on areas where students are facing challenges (https://login.mathletics.com,. https://en.wikipedia.org/wiki/Mathletics_%28educational_software%29).

Table 2: Light International School, Mombasa Mathletics Classes

MATHLETICS CLASS	TEACHER	COURSE
1 Robins	Mrs Beatrice Wamboi	England Year 1
2 Robins	Mrs Nancy Airo	England Year 2
2 Sparrows	Ms Catherine Muhindi	England Year 2
3 Robins	Mrs Loviner Adhiambo	England Year 3
4 Eagles	Mr Odhiambo Otieno	England Year 4
5 Eagles	Ms Reshma Shariff	England Year 5
6 Eagles	Ms Reshma Shariff	England Year 6
Pansies	Ms Esther Mnjama	England Reception
Year 7	Ms Patricia Kabibi	England Year 7
Year 8	Ms Patricia Kabibi	England Year 8

3.1.2 Reading Eggs

Reading Eggs makes learning to read interesting and engaging for students at Light International School, Mombasa, with great online reading games and activities. Reading Eggs is an online reading program that has hundreds of online reading lessons, phonics games and books for ages 2–13. As a cloud-based LMS, Reading Eggs motivates students to read digital books as they are rewarded with eggs every time they complete a reading lesson or comprehension. Each student has login details that they use to access the language activities set by teachers or do own reading at their pace and time. The Reading eggs online program provides teachers at Light International School, Mombasa, with comprehensive assessment reports on reading milestones of each student. (https://readingeggs.com/). As seen in figure 5 and 6, below Reading Eggs generates several reports that inform the teachers about areas to focus on when assigning reading or comprehension activities.
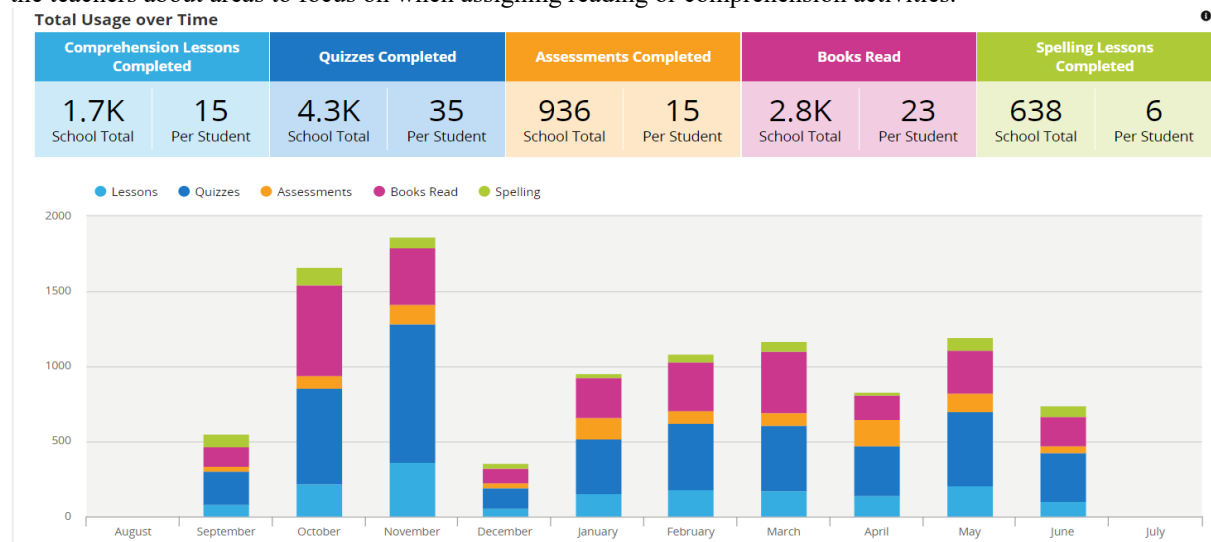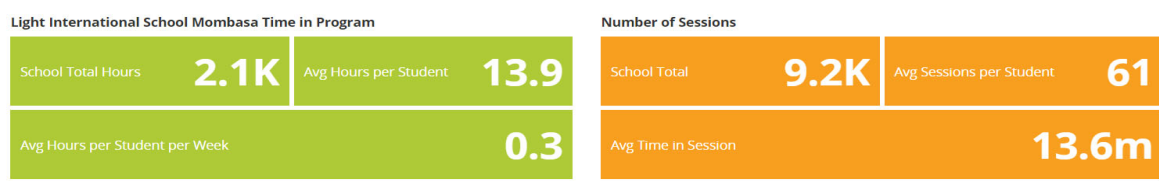

Figure 5: Sample Reading Eggs Report 1

Figure 6: Sample Reading Eggs Report 2

4.0 The Blended e-learning model at Light International School, Mombasa

The figure below (11) is a diagrammatic representation of blended learning at Light International School, Mombasa. The school offers both synchronous and asynchronous e-learning. Synchronous is offered though live online Zoom lessons while asynchronous e-learning is done through the Firefly LMS, supported by Mathletics and Reading Eggs online programs. The hybrid model of synchronous and asynchronous e-learning has several benefits at Light International School, Mombasa.

- Synchronous e-learning through Zoom Cloud Meeting ensures that teachers and students still interact remotely. Therefore teachers can take time to give feedback, explain new concepts, make clarifications and make use of features of traditional classrooms because students and teachers connect in virtual classrooms.
- Asynchronous e-learning by using Firefly LMS, allows the teachers to reach out to students who are unable to join online live classroom lessons. The setting of tasks on Firefly encourages self-paced learning among students because completion of tasks is based on students own timing. Asynchronous e-learning is also supported by Mathletics and Reading Eggs that are online programs to support numeracy and literacy skills.
- Asynchronous e-learning through Firefly LMS blends well with Constructivism teaching theory/pedagogy where learners are encouraged to construct their own knowledge
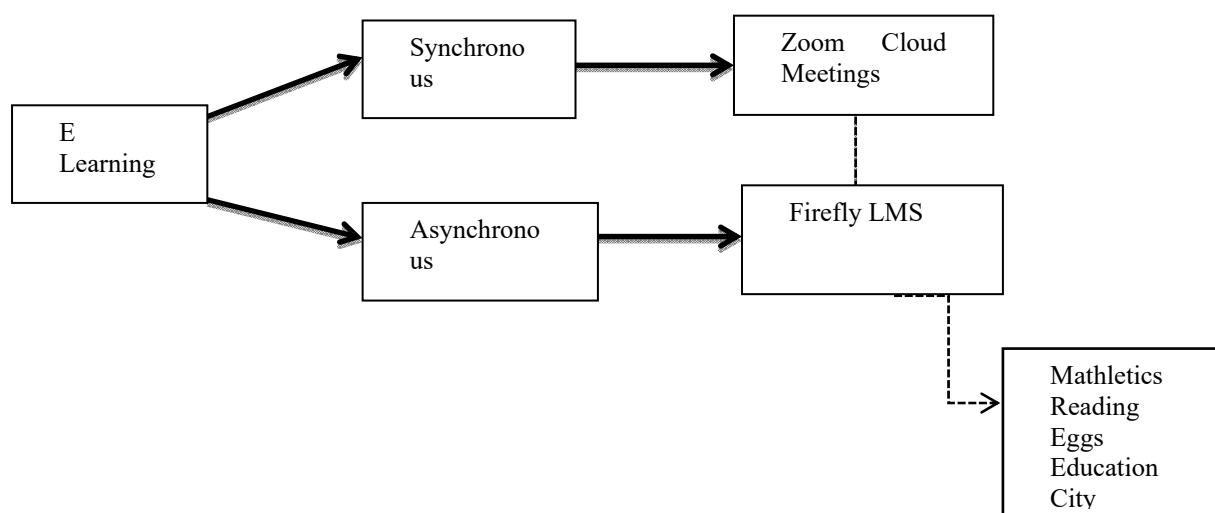

Figure 11: Blending of synchronous and asynchronous e-learning model at LIS, Mombasa

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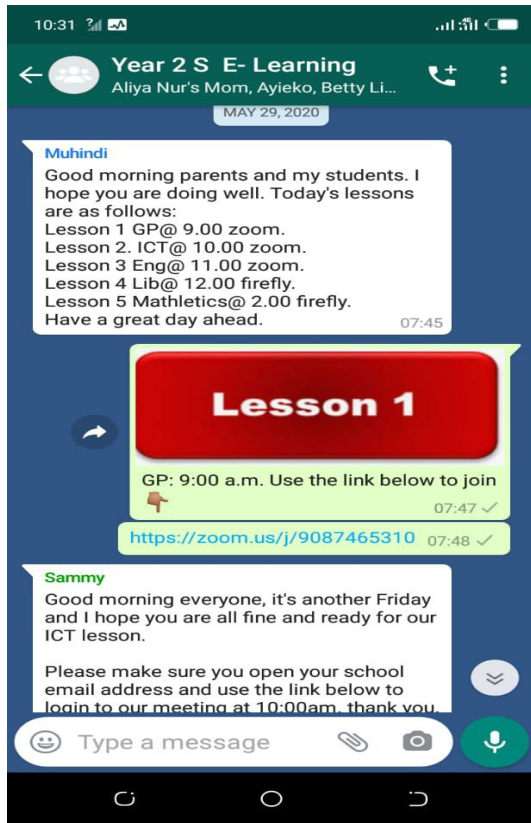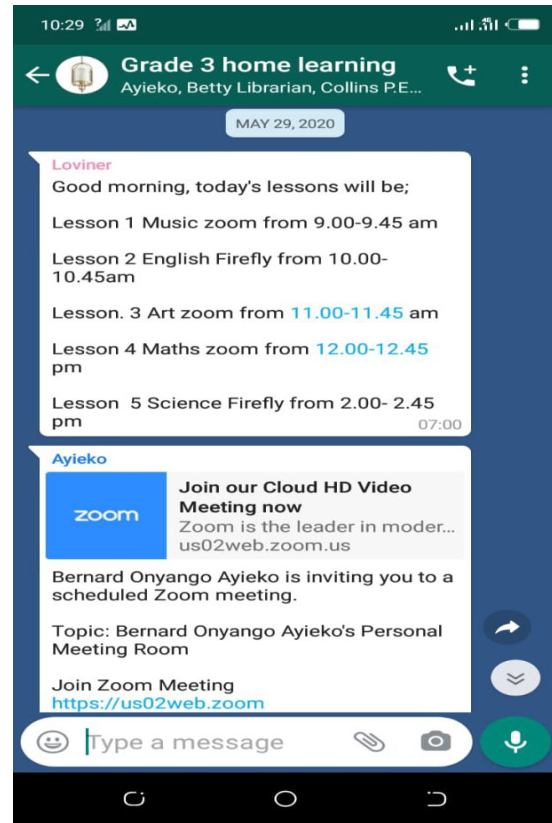www.easy-lms.com https://www.easy-lms.com/features/item10091
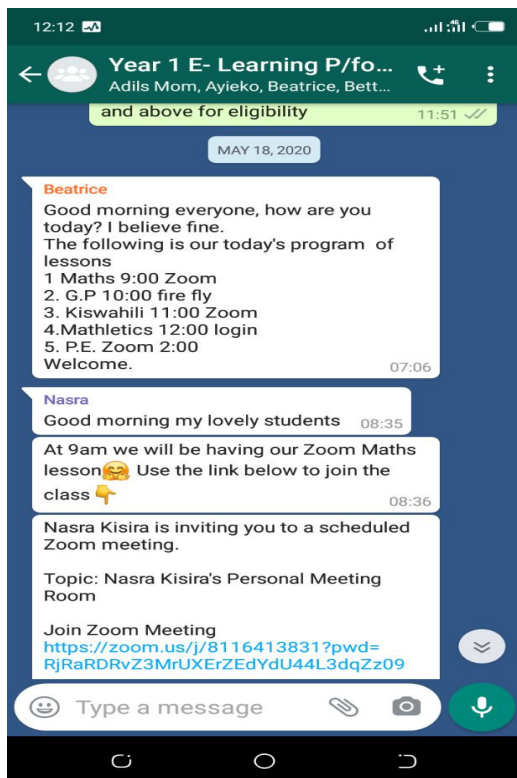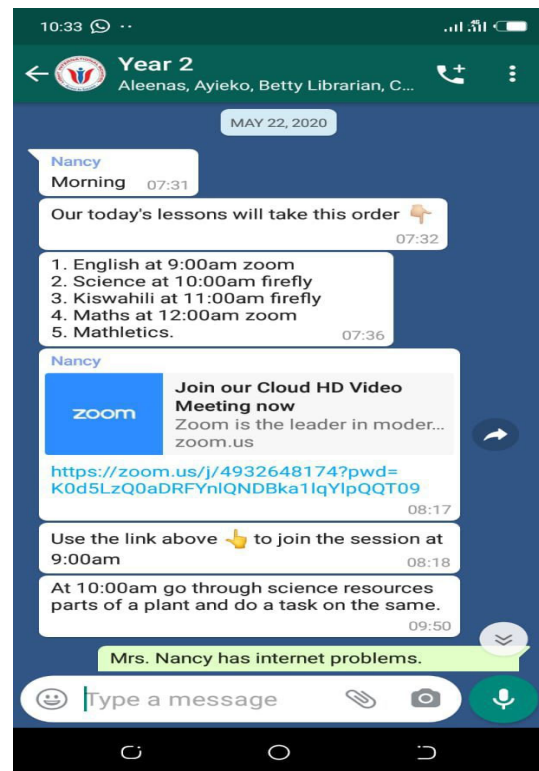
Figure 7

Figure 8

Figure 9

Figure 10