Blending With Tabshoura

A Blended Learning Model Adapted to the Lebanese Context

Developed by Lebanese Alternative Learning

December 2023

Acknowledgements

Lebanese Alternative Learning would like to express its deep appreciation to the individuals and organizations that helped make this study possible namely Expertise France, Teach for Lebanon, and the schools that participated in the research. The team extends their sincere appreciation to the Educational Committee composed of Fadi El Hage, Wadad Wazen, and Guenia Zgheib for their guidance, unwavering support, and invaluable insights throughout the entire research process. Their expertise and constructive feedback contributed significantly to the construction of the Blended Learning Model.

Abstract

As the country faces economic instability, political unrest and public health crises, the education system struggles with unprecedented challenges. This article explores these specific challenges that led to the total disruption of Lebanon's education system.

Drawing upon existing literature and insights from both quantitative and qualitative research methodologies which included surveys, key interviews, and focus groups with educational stakeholders, the article highlights the importance of shifting towards blended learning as a transformative approach for fostering resilience and continuity in education.

Furthermore, the article examines the barriers to the successful implementation of blended learning in Lebanon, ranging from infrastructure limitations, such as poor internet and electricity cuts, technological disparities, and the need for professional development among educators. As a strategic response to address the identified barriers, a contextualized blended learning model was developed. The model advocates the use of Tabshoura, a free interactive e-learning platform aligned with the Lebanese curriculum. The nature of this platform allows for a dynamic, autonomous, personalized, and self-directed learning.

Keywords: Blended Learning Model, Education, Lebanon, Tabshoura

Table of Content

Introduction

The Lebanese economy is currently facing what The World Bank describes as “the worst economic crisis globally since the mid-nineteenth century”. This crisis has been exacerbated by a series of dire events, with the currency losing more than 98% of its pre-crisis value by February 2023 (World Bank, 2023). The compounding crises have pushed 82% of the population into multidimensional poverty (ESCWA, 2021). Both the Lebanese and refugee populations, particularly those from marginalized communities, are grappling with an array of challenges spanning healthcare, education, fuel, medicine, security, food, water, and frequent power cuts (Save the Children, 2023).

The crisis that began in 2019 has led to a steep decline in fundamental aspects of a decent living standard, bringing Lebanon to the brink of severe social unrest. A series of calamitous events, including the COVID-19 pandemic, the devastating Beirut port explosion, the devaluation of the Lebanese pound, rising poverty, crumbling infrastructure, fuel shortages, and electricity outages, has compounded the nation's woes.

The education sector has not been immune to the socio-economic crisis. Soaring fuel costs, electricity shortages, and low incomes have led to public school teachers protesting, and students being unable to attend classes. According to Save the Children (2023), one million children in Lebanon are now left without access to education due to the closure of public schools.

Amidst these challenges, schools unknowingly adopted a Blended Learning Model during the crisis. Blended Learning combines a mix of traditional face-to-face learning and eLearning. This shift, though born out of necessity, has inadvertently introduced a hybrid approach to education

in Lebanon, reflecting the global trend toward innovative learning models to mitigate the impact of the ongoing crises.

The Lebanese Alternative Learning (LAL), a Lebanese Edtech NGO, whose mission is to design transformative high-quality education programs, has been working since its foundation in 2014 to support the education system and provide valuable resources to address the various consequences of school disruptions. In the framework of Shabake II[1], a project in partnership between LAL and Teach for Lebanon[2] (TFL) supported by Expertise France[3] a study was done aiming at designing a Blended Learning Model tailored to the specific challenges and limitations of Lebanon's educational landscape. For the purpose of this project, a research on Blended Learning was carried out, which included a literature review, a survey, focus groups, and key informant interviews.

The objectives of this article are:

1. To present a comprehensive analysis of the data and the identified challenges and opportunities upon which a Blended Learning Model adapted to the Lebanese context was developed.
2. To provide a comprehensive overview of research on Blended Learning.
3. To illustrate the developed Blended Learning Model.
4. To communicate the findings, conclusions, and recommendations effectively to relevant stakeholders, ensuring transparency and understanding.

---

[1] The overall objective of the Shabake project is to support social cohesion, peace and stability and promote gender equality by engaging civil society organizations to play a vital role in crisis management and to provide sustainable support to vulnerable host communities and Syrian refugees.

[2] Teach For Lebanon is an NGO that provides less privileged children with quality education by recruiting, training and placing young leaders into the classrooms for two years to equip children with lifelong learning skills. These young leaders continue their long-term impact as effective alumni.

[3] Expertise France is the French international technical cooperation agency, with a status of public institution under the joint supervision of the Ministry of Europe and Foreign Affairs (MEAE) and the Ministries of Finance and Economy.

Literature Review

Lebanese Context

Perception of Online Learning During the COVID-19 Period

Education in Lebanon like any other country in the world was severely impacted by the COVID-19 pandemic. The abrupt closure of schools imposed a swift transition to online teaching. In response, the government adopted three key distance learning channels: a digital learning platform (Mawaridy), targeted TV programs, and the distribution of paper-based instructional materials (Assaf & Nehmeh, 2022).

Although there is currently no comprehensive national data showing the effectiveness of the above interventions, a study conducted by El Rouadi and Anouti (2020) on the online learning experiment, involving 1,458 individuals from Lebanese schools, showed that the online learning experience during the pandemic was widely perceived as a failure. The principal challenges identified by this study included poor internet connectivity and frequent power outages. While, another study carried out by Assaf & Nehmeh shed light on additional barriers to effective remote learning namely social isolation, lack of teachers training, absence of pedagogical approaches to use in a virtual learning environment, and lack of digital content aligned with the Lebanese curriculum (Assaf & Nehmeh, 2022). In addition to the challenges posed by the COVID-19 pandemic, Lebanon faced recurrent school disruptions as a result of strikes, political turmoil and economic instability.

The multifaceted challenges faced by the education system in Lebanon emphasize the need for comprehensive solutions. This pressing need is further highlighted in the study conducted by Assaf

& Nehmeh. The study concludes by asserting the necessity for a 'Plan B' in the Lebanese education system, ensuring safe and effective learning delivery during crisis-induced school closures. The adoption of a Blended Learning policy by the Ministry of Education and Higher Education (MEHE) is strongly recommended given the numerous advantages it provides. These include a convenient, flexible, and self-paced learning. To this end, ensuring accessibility for all (electricity, internet, ICT gadgets) and developing qualitative online-learning through designing high-quality instructional materials aligned with the Lebanese curriculum become a must (Assaf & Nehmeh, 2022).

Infrastructure for Digital Learning Program

The Lebanese Ministry of Education and Higher Education (MEHE), in its "Lebanon five-year General Education Plan 2021-2025", recognized the critical need for developing digital resources to support learning, particularly noting disparities in digital literacy across different school types and regions. To address these challenges, MEHE initiated the Infrastructure for Digital Learning program (Programme 3.2). This program aims to enhance the digital infrastructure in public schools, including the adoption of the Learning Management System (LMS) Classera for a two-year period and the development and optimization of educational content by the Center for Educational Research and Development (CERD).

Key objectives of Programme 3.2 include equipping schools with necessary hardware, ensuring regular access to digital platforms, and enhancing teacher readiness for digital education. The program is structured around five components, encompassing device distribution, infrastructure

improvement, content development, teacher training, and parental engagement in digital learning.

The program's success depends on reliable access to electricity and the internet, areas where Lebanon faces significant challenges. The high cost and poor quality of internet services, along with frequent electricity outages, have been barriers to effective online learning (UNESCO, 2020). MEHE's strategy includes contingency measures to address these infrastructural issues and ensure consistent access to digital learning resources for both teachers and students (Wazzan, 2020).

Understanding Learning Modalities

Educational landscapes are evolving, and understanding the nuances of Blended, Hybrid, and Online Learning is essential. Here's a detailed look at these contemporary learning modalities.

Traditional Classroom Setting (Brick-and-mortar)

This refers to the conventional physical classroom environment prevalent in schools across the globe. It is the foundational setting for face-to-face teaching and learning (Truitt, 2016).

Online Learning

Central to modern education, online learning is defined as education that is primarily delivered via the internet. It can take the form of a cyberschool or serve as a supplementary component to traditional schooling (Watson, 2005).

According to Masadeh et al. (2016), the advantages of online learning include increased flexibility, reduced costs, and enhanced comfort for learners and educators. However, it faces challenges like limited social interaction and the complexity of accurately assessing the learning process. Tamer Abbas (2016) stresses the importance of making online learning engaging and relevant to students' interests, with user-friendly platforms and diverse assessment methods.

Synchronous and Asynchronous Learning.

Synchronous Learning. It involves real-time instruction, either in-person or through digital platforms like video-conferencing (Hrastinski, 2008). It fosters immediate interaction between teachers and students. Islam et al. (2018) highlight its effectiveness in boosting student engagement and motivation, primarily due to its collaborative format.

Asynchronous Learning. In contrast, asynchronous learning allows students to engage with course material independently and at their convenience, often outside the traditional classroom setting (Hrastinski, 2008). This could involve learning through online forums, pre-recorded lectures, or homework assignments.

These diverse learning modalities reflect the changing dynamics of student needs and preferences, highlighting the versatility required in contemporary teaching and learning environments.

A common misconception exists leading to the interchangeable use of the terms "Hybrid Learning" and "Blended Learning." Boora et al. (2010) employ both terms simultaneously, as they involve a mix of in-person instruction and online activities. However, this is not entirely accurate. Hybrid Learning adopts in-person and remote instruction simultaneously. On the other

hand, Blended Learning involves the asynchronous application of both. In practice, most educational institutions have been implementing Blended Learning. Thus, it is crucial to recognize the distinction between both terms: Hybrid Learning and Blended Learning. (Abi Raad & Odhabi, 2021).

Hybrid Learning

In this model, teaching occurs simultaneously in a physical classroom and online. A teacher instructs students who are physically present in the classroom while also broadcasting the lesson to remote learners (Abi Raad & Odhabi, 2021). This approach is particularly beneficial for maintaining social distancing, as it allows a fraction of the class to attend in person while others participate remotely.

Blended Learning

Blended Learning is a fusion of traditional classroom methods and online educational tools, offering students a more flexible and interactive learning experience (Fisher et al., 2017). As defined by Horn & Staker (2014), Blended Learning allows students significant control over various aspects of their education such as the time, place, path, and pace of learning, while still incorporating traditional, supervised classroom settings. Sharma (2016) recognized that combining synchronous and asynchronous learning can offer a more comprehensive educational experience.

The model of Blended Learning, as described by the Christensen Institute (2014), involves a mix of online and offline modalities like small-group instruction and tutoring, creating a cohesive learning experience.

Taxonomy of the most common Blended Learning Models. The technique for implementing Blended Learning is extremely flexible. There are countless different models varying by scale, content, technology, learning space, etc.

The Christensen Institute has defined a taxonomy of the most common models used in schools: The Rotation Model (which can be divided into 4 different submodels: Station Rotation, Lab Rotation, Individual Rotation and Flipped Classroom), Flex Model, A la Carte Model, and Enriched Virtual Model. Even though they are not the only way to implement Blended Learning, they provide a partial overview of what has already been implemented.

Rotation Model. The Rotation Model means that within a given course or subject, students rotate on a fixed schedule or at the teacher's discretion between learning modalities, at least one of which is online learning. Other modalities might include activities such as small-group or full-class instruction, group projects, individual tutoring, and pencil-and-paper assignments. The Rotation Model has four sub-models: Station Rotation, Lab Rotation, Individual Rotation, and Flipped Classroom.

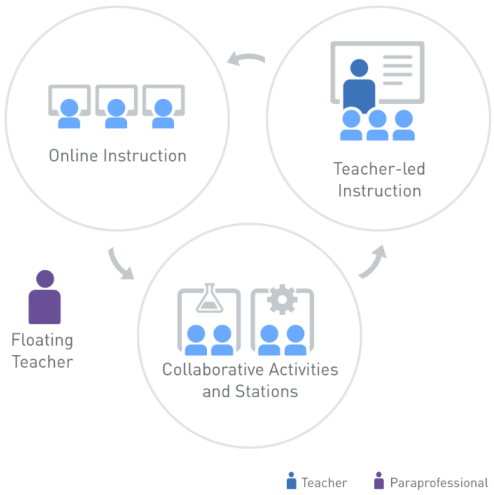
The Rotation Model is the most common model of Blended Learning used to deliver small group instruction.

Station Rotation. Station Rotation includes groups of students rotating in a contained classroom through learning stations, at least one of which would include an online learning component. Students are usually grouped by need or ability. The group moves through various stations together depending on the teacher's set up. Stations may include face-to-face components (small group instruction with the teacher), individual self-paced and online

instruction independent from the teacher, and collaborative or individual practice or application (may be an online or traditional task).

Figure 1:

Station Rotation Model

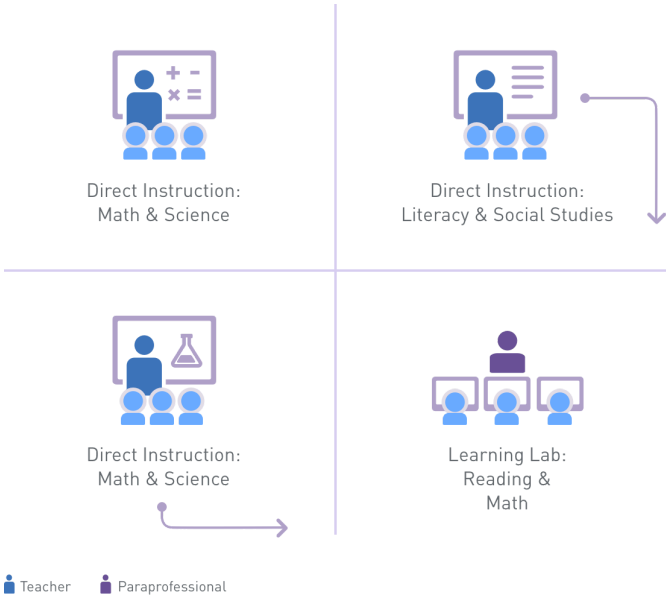


Note. Christensen Institute (2014). Blended Learning Definitions. Retrieved from https://www.blendedlearning.org/models/#stat

Lab Rotation. Lab Rotation is particularly suitable for schools in which not every student possesses their own device to use. Its setup is similar to station rotation, but involves students moving to a computer lab for a part of the day, facilitated by staff, usually different from certified teachers (such as paraprofessionals). They focus on basic skills through the use of software or other appropriate online materials.

Figure 2:

Lab Rotation Model



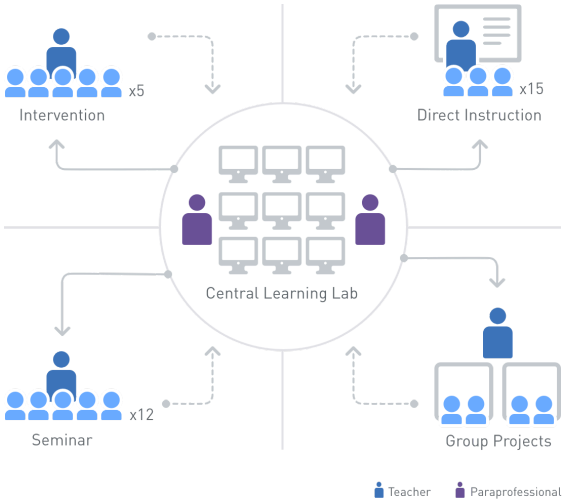
Note. Christensen Institute (2014). Blended Learning Definitions. Retrieved from https://www.blendedlearning.org/models/#stat

Individual Rotation. Each student has an individualized playlist designed by algorithms based on their assessment scores and does not necessarily rotate to each available station or modality. They may still encounter similar educational experiences, but the prescribed rotation schedule is based on their personal needs. Horn and Staker (2014) explained the individual rotation as, "*Each student has an individualized playlist to guide him through the rotations. Paraprofessionals are on hand to assist students. In the breakout rooms, a face-to-face teacher expands on the material introduced online and helps students apply it.*" This model offers the possibility for students to transition individually rather than with a group of students. Individual

rotation programs are still rare, but are likely to emerge on a large scale outside of traditional classrooms at first.

Figure 3:

Individual Rotation



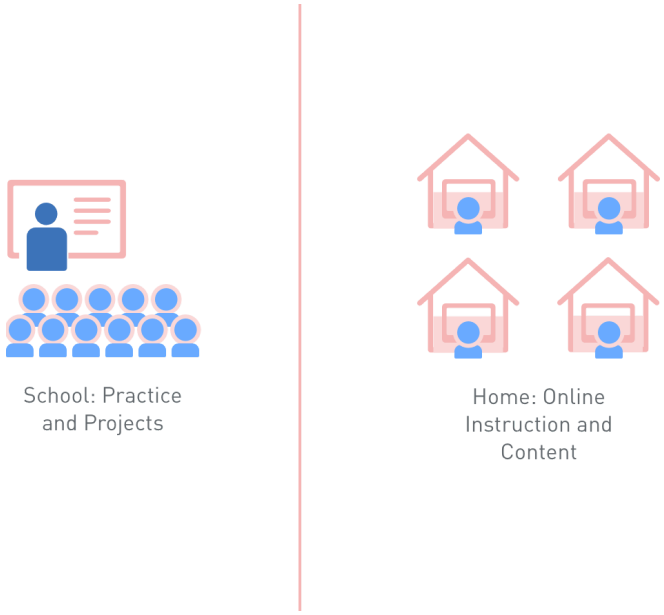
Note. Christensen Institute (2014). Blended Learning Definitions. Retrieved from https://www.blendedlearning.org/models/#stat

Flipped Classroom Model. The Flipped Classroom Model turns the traditional learning framework upside down. In this model, students do the learning part at home via online tools, such as instructional videos, recorded lectures, and other content-related material, previous to the class. The instructor then uses traditional face-to-face time to assist students in applying what they have learned through more advanced tasks and projects. This model lends itself to the middle school and high school settings where time is valuable, and often limited.

According to the Christensen Institute (2014), contrary to the various rotation models, for the next three models developed below, namely, Flex Model, A la Carte Model and Enriched Virtual Model, "*the Internet tends to serve as the backbone for student learning. As long as the devices and connectivity are working, students can access learning opportunities. Face-to-face adults are, of course, critical for providing mentoring, support, and often the application of knowledge for deeper learning and higher-order skills, but these models diminish the students' total dependence on them for managing their learning*."

Figure 4:

Flipped Classroom

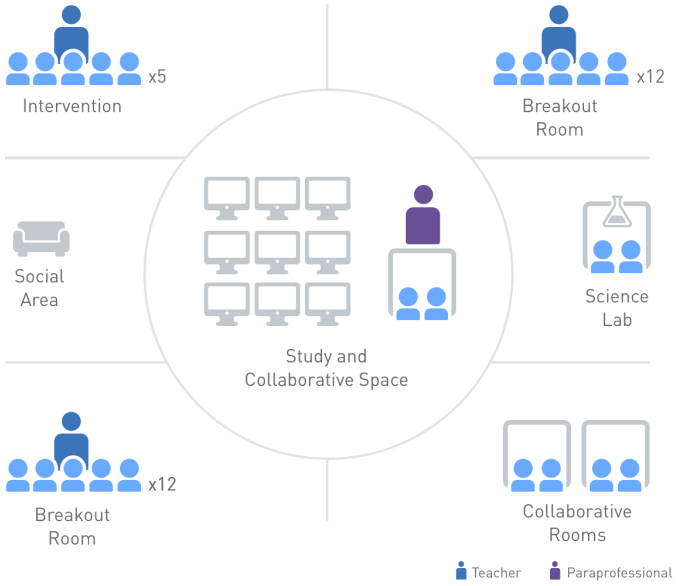


Note. Christensen Institute (2014). Blended Learning Definitions. Retrieved from https://www.blendedlearning.org/models/#stat

Flex Model. Originally designed to allow students who dropped out of high school to earn back academic credit, the Flex Model offers students the opportunity to set their own schedule. In the Flex Model, online instruction and content delivery is the backbone of student learning. Instructors design the course, but act as facilitator and are used "as-needed." In this model, learning is student-driven and self-paced, which is much more likely to be used in a high-school or college setting.

Figure 5:

Flex Model



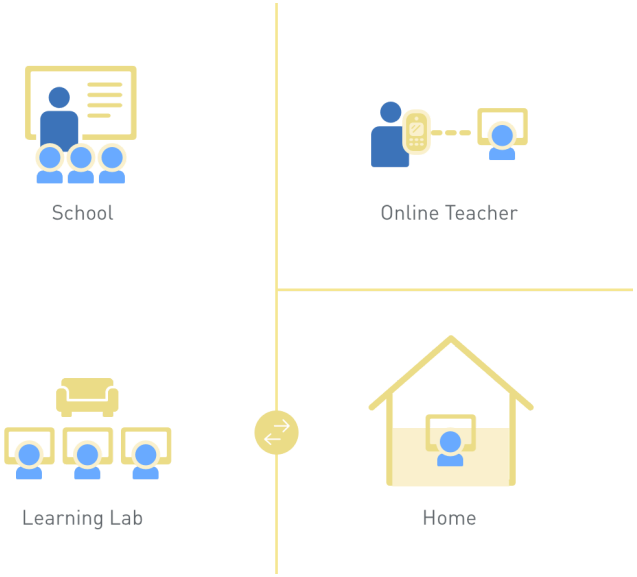
Note. Christensen Institute (2014). Blended Learning Definitions. Retrieved from https://www.blendedlearning.org/models/#stat

A la Carte Model. The "A la Carte" model offers students the opportunity to take a fully online course in addition to their traditional course schedule, with an assigned online instructor. Students can take the online courses either on the brick-and-mortar campus or off-site. This type of model is more common in high-schools and colleges, as it allows students to move

more quickly through their program. More and more colleges are offering this option, and high-schools are doing the same to ensure that their students are fully prepared for higher education. Most A la Carte programs serve students who did not have access to courses such as Advanced Placement and elective courses.

Figure 6:

A la Carte Model



Note. Christensen Institute (2014). Blended Learning Definitions. Retrieved from https://www.blendedlearning.org/models/#stat

Enriched Virtual Model. The various Enriched Virtual programs emerged mostly to provide more support for students enrolled in full-time virtual schools. This model is a global academic experience in which students divide their time between content delivery via online distance learning and traditional face-to-face learning. The learning method typically begins as a fully online learning method and then becomes a Blended Learning method. Students learn face-to-face with their instructor and are free to do the remaining work remotely. As Horn and

Staker (2014) explained "*Many Enriched Virtual programs began as full-time online schools and then, noticing that their students needed more support, developed blended programs to provide face-to-face enrichment and a safe, peaceful physical setting*". However, traditional classes do not meet every day, or even regularly. Usually, courses that implement a Virtual Enriched Model rely on student progress to determine the frequency of traditional face-to-face instruction or support. That said, this model lends itself to higher education and is not ideal for elementary and secondary schools.

Figure 7:

Enriched Virtual Model

Note. Christensen Institute (2014). Blended Learning Definitions. Retrieved from https://www.blendedlearning.org/models/#stat

Benefits of Blended Learning. A meta-analysis by Means highlights several benefits of Blended Learning, including improved accessibility, enhanced small group instruction, diversity in teaching methods, increased student engagement, and support for complex content.

According to Horn & Staker (2014), Blended Learning offers key aspects such as:

- *Time Flexibility*: Removes the constraints of a standard school day or year.

- *Place Flexibility:* Extends learning beyond the physical classroom.
- *Path Flexibility:* Allows students to learn through methods that suit them best, supported by interactive software.
- *Pace Flexibility*: Students can learn at their own speed, no longer bound by the pace of the whole class.

Therefore, Blended Learning is an innovative approach that harnesses the strengths of both traditional and online education, offering a more personalized and effective learning journey for students.

Effective Practices and Future Trend

Consideration of Practices

Instructor Readiness. The experience and motivation of instructors in blended settings are crucial. Teachers must be realistically prepared for changes in teaching methods and student diversity, necessitating comprehensive training and adjustment to new teaching environments (Saichaie, 2020).

Student Readiness. Students' experience with and motivation for blended courses are vital. Their ability to access technology and engage with online platforms should be assessed to inform course design (Saichaie, 2020).

Learning Goals. Goals should be specific and measurable, using action-oriented verbs from Bloom's Revised Taxonomy to clarify what students should know and be able to do (Anderson et al., 2001).

Class Time Allocation. The balance between face-to-face and online elements in a course should reflect the course's objectives, with adjustments made based on whether the activities are synchronous or asynchronous (Saichaie, 2020).

Assessment of Learning. A variety of assessment methods should be used to measure student learning, aligning with the learning goals and providing timely feedback (Saichaie, 2020).

Learning Activities. Designing activities that promote critical thinking, problem-solving, and collaboration is essential, integrating both online and offline learning environments (Saichaie, 2020).

Interaction and Inclusivity. Creating a community of learning involves addressing equity, fostering participation, and integrating cognitive, social, and teaching presences in the course (Garrison et al., 2004).

Role of Technology. Using technology that is relevant to the course and is aligned with the learning goals (Saichaie, 2020).

Elements of Best Practices

Appropriate Pedagogy. Linder (2017) emphasizes a learner-centered approach, focusing on active learning and interaction. Technology tools should align with learning objectives and be selected carefully to avoid a dichotomy between pedagogy and technology.

Student Engagement. Andrew Miller (n.d) highlights the importance of meaningful learning activities that give students a sense of purpose and autonomy. This is echoed by Boushey and Moser (2014), who note that providing students with choices enhances their motivation and engagement.

Prepared Institutions. Institutions should adopt technologies suitable for Blended Learning, especially in schools where online learning is not yet a focus (Nguyen, 2015).

In addition, institutions should take a leadership role in refining pedagogical strategies for blended/hybrid learning, continuously evaluating and updating their approaches. Furthermore, the curricula should be modified to include online learning components, and assessment methods should reflect this integration (Abi Raad & Odhabi, 2021).

Future Trends

According to Abi Raad and Odhabi (2021), the advancement of AI promises significant benefits for Blended Learning. AI can tailor learning experiences to individual student needs by tracking their activities and progress, offering personalized insights into their learning outcomes. This suggests a bright future for Blended Learning as an effective educational medium.

In order to develop a tailored Blended Learning Model that addresses Lebanon's educational challenges, LAL's team conducted a field research to collect insights and experiences of educational stakeholders.

Methodology

Research design

This research employs a mixed-method approach encompassing both qualitative and quantitative data collection and analysis. Qualitatively, in-depth online interviews and focus groups were conducted from June to August 2023 with a range of stakeholders in the educational sector. Quantitatively, a survey was disseminated using KoboToolbox among over a thousand educators throughout July 2023.

Data Collection Tool

To gather qualitative data, six interview guides (Appendix A to E) were developed for each stakeholder within the educational sector, featuring a range of targeted questions. To gather quantitative data, a structured survey (Appendix F) was developed and disseminated using KoboToolbox.

Data analysis

For qualitative data analysis, the interviews were recorded and subsequently transcribed. The transcripts were then subjected to thematic analysis, wherein segments of transcripts were coded and grouped into thematic categories. After the collection and cleaning of data, a variety of statistical analyses were conducted using Excel for quantitative data analysis. This analytical process facilitated the emergence of insights and patterns, contributing to a comprehensive understanding of the challenges present in online teaching within Lebanon's educational landscape.

Demographics

Qualitative data

Qualitative data was gathered through interviews involving various stakeholders in the education sector, employing a combination of In-Depth Interviews and Focus Groups Discussions. It is important to mention that, during the analysis, some respondents were classified as both teachers and parents. This categorization was based on their shared experiences, encompassing both the classroom setting and their role in instructing their own children.

In-Depth Interviews	Focus Group Discussions
● 3 Education Professors ● 1 University E-learning Director ● 1 School Principal ● 1 School IT Administrator ● 1 Educational Manager	● 1 Group of Parents of Students ● 3 Groups of School Teachers ● 1 Group of School Students ● 1 Group of School Principals

Quantitative data

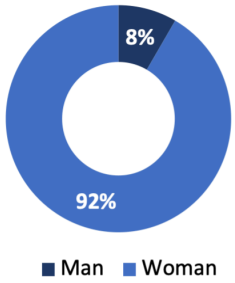
Quantitative data was gathered through a survey that adhered to the OECD-DAC criteria and was distributed to over one thousand educators in Lebanon. 119 educators answered the survey.

Table 1:

Gender - N=119

Table 2:

Age - N=119



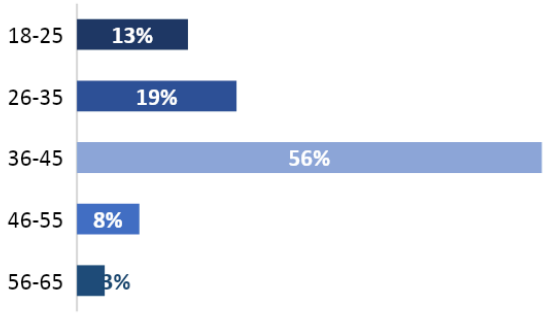


Table 3:

Years of Teaching Experience - N=119

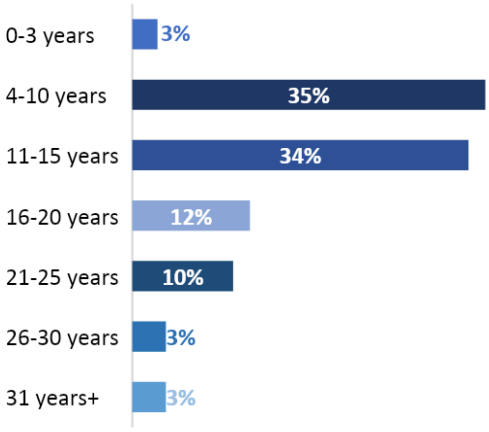


Table 4:

Grade Taught - N=119

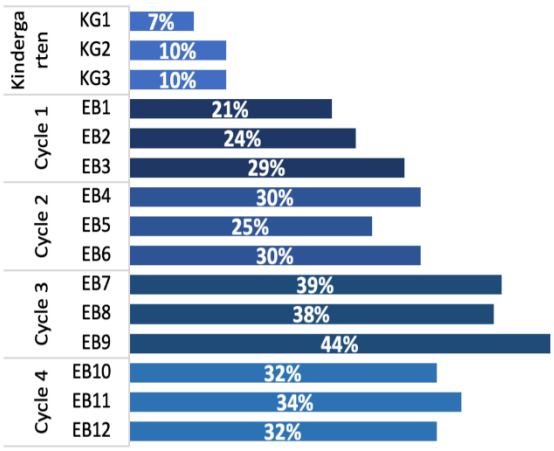
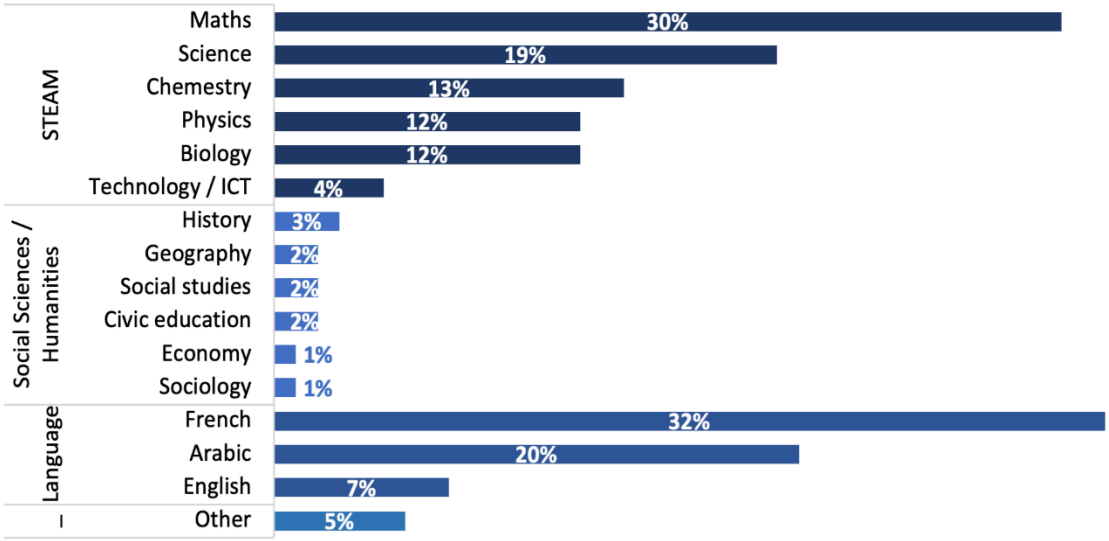


Table 5:

Subject Taught - N=119


STEAM
Maths
30%
Science
19%
Chemestry
13%
Physics
12%
Biology
12%
Technology / ICT
4%
Social Sciences / Humanities
History
3%
Geography
2%
Social studies
2%
Civic education
2%
Economy
1%
Sociology
1%
Language
French
32%
Arabic
20%
English
7%
Other
5%

Findings

Concept definition

Blended Learning, within the education sector, often proves challenging to define. Different stakeholders hold varying interpretations of this concept, leading to diverse definitions and it is frequently used interchangeably with terms like Hybrid Learning, Hyflex, and Comodal Education. Nevertheless, a common understanding is that Blended Learning combines two distinct delivery methods: (1) Synchronous and (2) Asynchronous.

1. Synchronous teaching can occur in physical classrooms, online environments, or as a hybrid approach where some students attend in person while others join remotely. Traditional in-class synchronous teaching is characterized by live, time-bound instruction.
2. Asynchronous teaching primarily takes place in online settings but can also be implemented in physical classrooms. In this approach, students engage with recorded or pre-prepared material and activities independently. Various methods are employed, including distributing documents and exercises for students to study on their own, or teachers recording their lessons and sharing the recordings with students, granting them the flexibility to progress at their own pace within a certain timeframe.

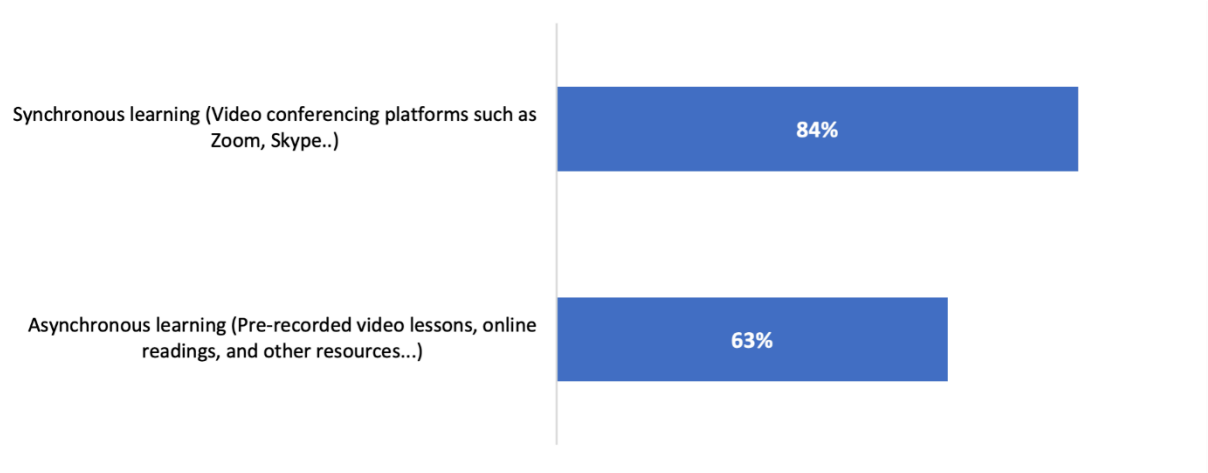
Throughout the interviews, several participants emphasized that Blended Learning should not be seen as a replication of traditional classroom or a simple process of uploading files. Instead, it is a dynamic educational approach that harnesses a diverse array of tools and resources.

Online teaching

As depicted in Table 6 and 7, during the period of school closures, the majority of teachers opted for synchronous delivery methods, such as video conferencing platforms, while 63% employed asynchronous delivery methods. Additionally, multimedia presentations designed for synchronous learning – such as slideshows, videos, and interactive simulations – were commonly used.

Table 6

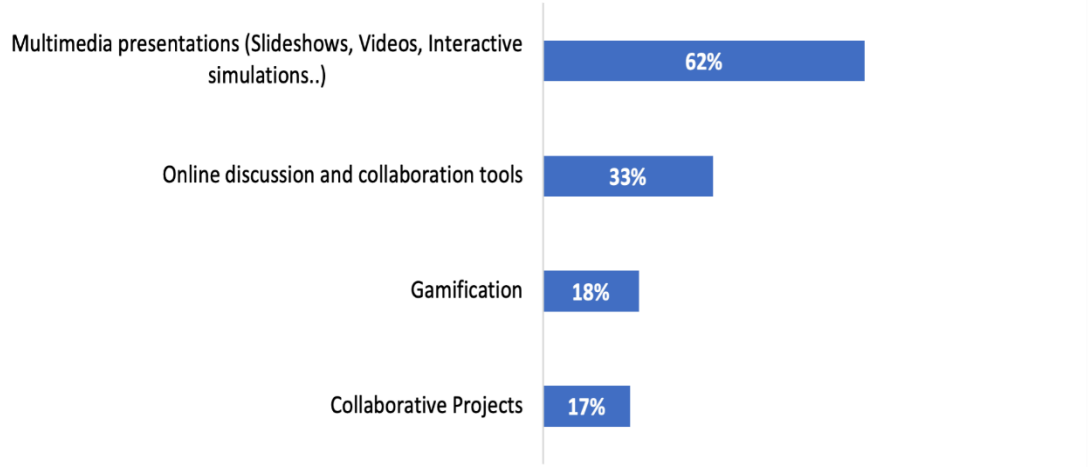
Delivery Method - N=119



The results revealed that 75% of teachers who employed asynchronous teaching also incorporated synchronous teaching into their instruction. In contrast, only 56% of those utilizing synchronous teaching methods also used asynchronous teaching. This difference could be attributed to various factors (1) Teachers' educational backgrounds and training; (2) technological readiness of the teachers; and (3) perceptions of student engagement.

Table 7:

Tools Used - N=119



Over the past years, teachers utilized a variety of tools for online teaching as demonstrated in Table 8. These tools comprised video conferencing platforms, instant messaging applications, specialized educational tools, and learning materials. The primary devices for implementing these tools were Laptops (88%) and smartphones (66%), as indicated in Table 9.

Table 8:

Media Medium Used - N=119

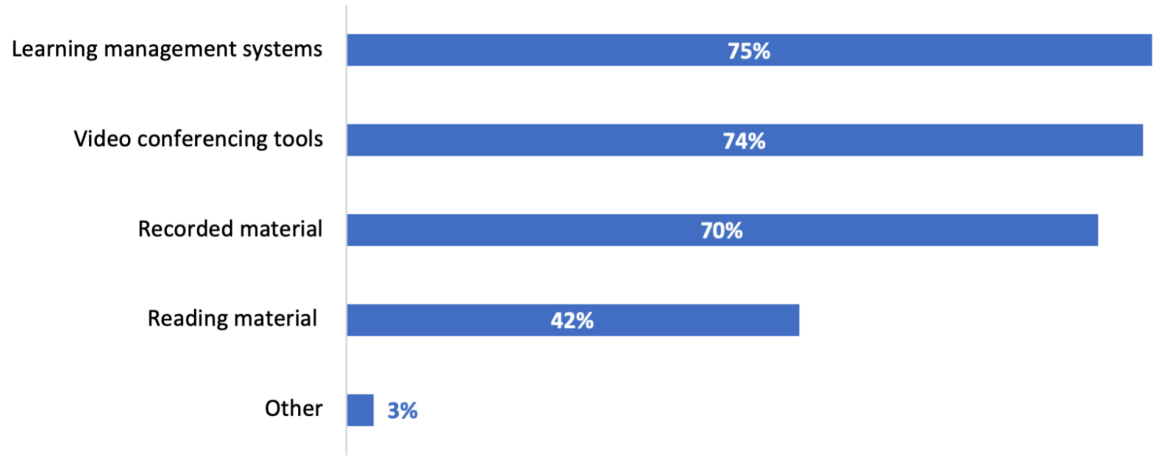
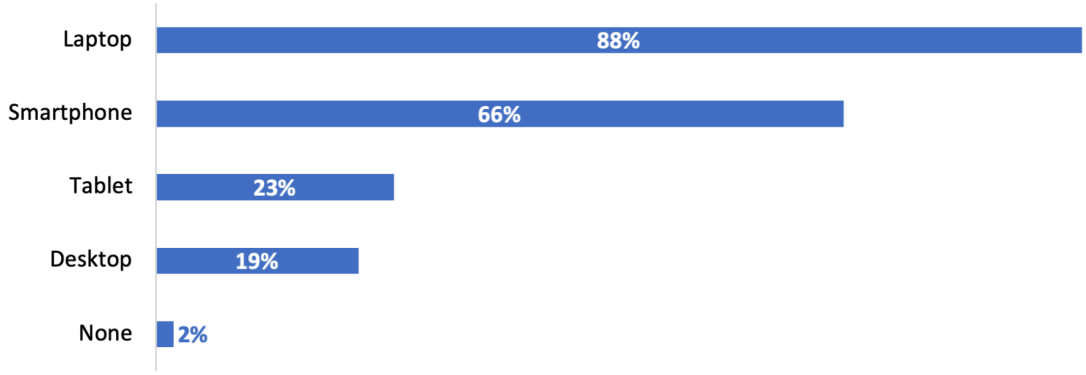


Table 9:

Type of Electronic Devices Used to Deliver a Course in the Past Three Years - N=119



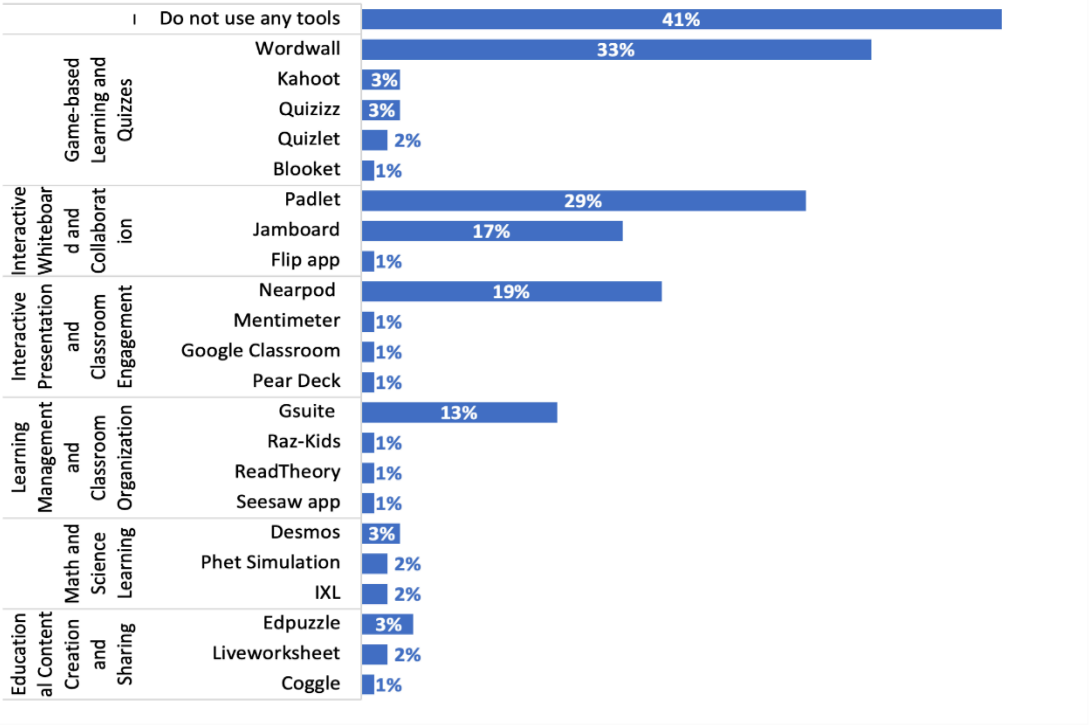
Amidst school closures, educators turned to video conferencing tools such as Microsoft Teams Video Call and Zoom, as well as instant messaging applications, primarily WhatsApp. They leveraged Video conferencing platforms for synchronous teaching, conducting classes in a traditional manner with lectures and sharing a PowerPoint presentation on their screen. While effective, this approach had some drawbacks related to power cuts and Wi-Fi connectivity issues, impacting student attendance and class delivery. In response, teachers transitionned to asynchronous teaching via WhatsApp. Some teachers organized and facilitated classes by segmenting lessons into sections dedicated to the teacher's explanation, students' questions, and practice exercises. Homework assignments were also dessiminated through the platforms, ensuring a continuous learning experience.

In addition, some teachers incorporated dedicated learning tools in both synchronous and asynchronous teaching. As illustrated in table 10, 59% of teachers used these tools, with Worldwall and Padlet emerging as the most popular choices. On average, teachers employed approximately 2 distinct tools for their classes. These learning tools proved effective in

maintaining student engagement, enabling customization of content to align with ongoing lessons (e.g., Quizizz), and facilitating the tracking and monitoring of student progress and understanding of the material.

Table 10:

Learning Tools Used by Teachers for Online Teaching - N=119



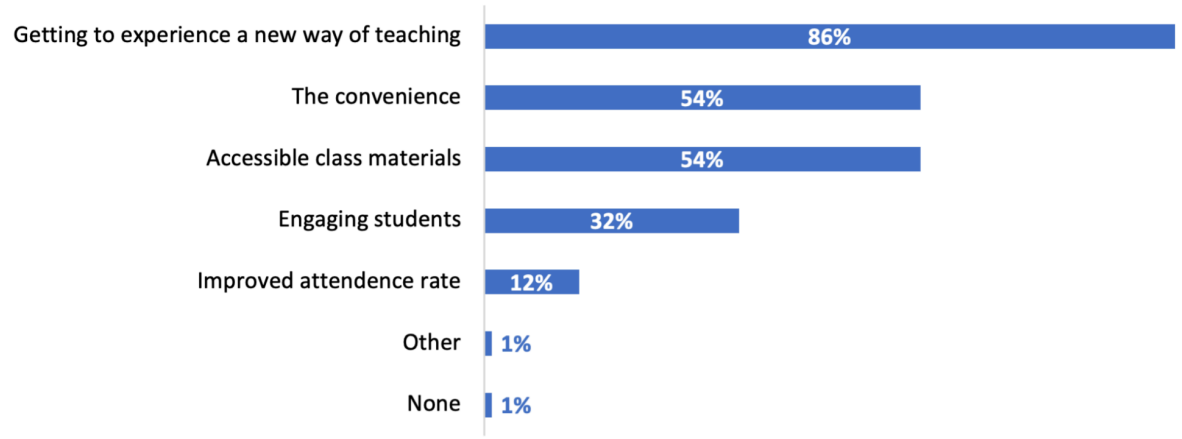
Teachers also dispatched education materials for students to review at their own pace, comprising YouTube videos and learning documents. These materials served multiple purposes, enabling students to review previous class content, reinforcing their understanding of the lesson with additional material, and supporting a flipped classroom approach.

Advantage of Online Learning

While engaged in online teaching, the majority (86%) of teachers found experiencing a novel approach of teaching enjoyable. They also appreciated the convenience (54%) that online teaching offers, coupled with the ready availability of class materials (54%), as shown in table 11.

Table 11:

Most Enjoyable Aspects of Remote Teaching - N=111



From the teacher's side

Online learning provides teachers with valuable data that aids in informed decision-making, facilitates tailored support for students, and allows for adaptable teaching methods. The interviews highlight the creation of reusable resources, such as educational videos and PowerPoint presentations, which teachers have developed during the online teaching experience. These resources are versatile tools that can be seamlessly integrated into both online and

traditional classrooms. This adaptability not only streamlines teaching efforts but also ensures that teachers have access to well-prepared materials, enriching the quality of their instruction.

From the student's side

The interviews shed light on the empowering aspects of asynchronous learning for students. It gives students the opportunity to learn at their own rhythm, particularly in contrast to the sometimes fast-paced and distracting nature of traditional classrooms. This autonomy encourages students to take ownership of their own education, manage their study schedules effectively, complete assignments at their own pace and time, receive timely feedback, and develop robust learning strategies. Furthermore, the interviews emphasize the flexibility inherent in online learning, enabling students to break free from the confines of a physical classroom. This newfound freedom allows them to learn when and where it suits them best, fostering a sense of empowerment and agency.

Challenges of Online Learning

While online teaching offers several advantages, it also presents a multitude of challenges for both teachers and students.

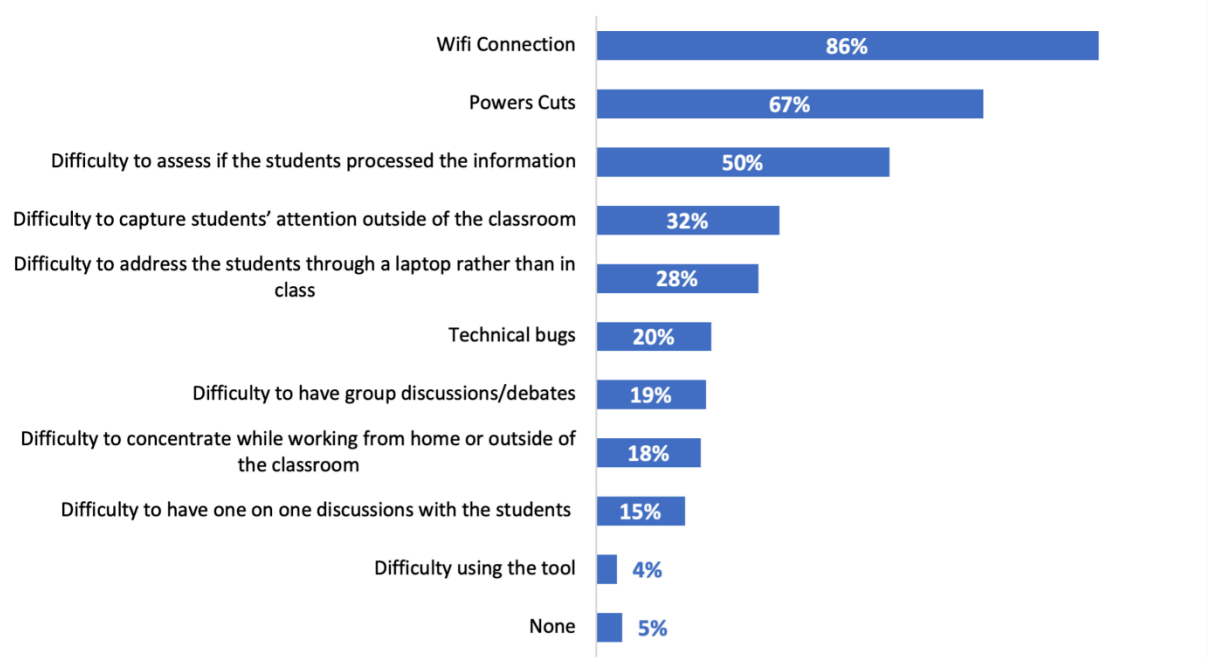
Electricity Cut and Poor Wi-Fi Connection

Teachers faced two primary challenges during online teaching: Wi-Fi and Power cuts, as highlighted in table 12. Notably, these challenges are beyond their control and depend on the country's poor infrastructure. Electricity cuts posed a significant barrier, as it is essential for charging devices (laptops, desktops, etc.), and Wi-Fi. Even with a stable electricity supply, unreliable Wi-Fi causes disruptions in both video and audio during synchronous online classes.

Additionally, it hinders the downloading of materials and exercises, creating challenges for asynchronous learning. These challenges not only disrupt the delivery of educational content but also place strain on educators in fostering student participation and comprehension.

Table 12:

Challenges Faced by Teachers - N=111



Parents' Perception of Online Learning

Two challenges arose regarding parents' perspective on online learning (1) their perception on online learning itself and (2) their understanding of their roles during online courses and exercises:

1. Many parents tend to associate their child's learning gaps with the challenges encountered during online education, frequently resulting in a degree of resistance when enrolling their children in online classes. They worry that this learning model might further deepen these gaps and impede their child's overall educational development.

2. Parents play an important role in supporting their children's online education, but this presents a unique set of challenges. Teachers rely on parents to understand the teaching methodologies being used and ensure discipline during study hours at home. Additionally, when children have questions or encounter difficulties, they are more likely to turn to their parents for help rather than the teacher. The extent of parental involvement in their child's online learning remains a critical question and a potential challenge to effective online teaching.

Teaching younger ages

At a young age, students often struggle with the discipline required for effective online learning. Young students might struggle with staying on task, resisting distractions at home, and managing their time effectively. They may require more frequent reminders and supervision from the teachers and/or caregivers to ensure they stay engaged with their online lessons.

Assessment of students' learning

Educators encountered challenges in assessing students during online teaching, prompting some schools to resort to in-person exams. The concern was that students have been potentially receiving assistance from others, such as parents, siblings, and/or classmates.

Teacher readiness to online learning

In Lebanon, teachers expressed concerns about inadequate capacity-building training for online teaching. Firstly, there is a lack of training on the effective use of digital tools, and secondly, there is a lack of training on the diverse pedagogical methods. The majority of teachers had to independently navigate and adapt to online instruction during the COVID-19 period.

Engagement of students

Teachers find it challenging to actively engage students during online classes, often feeling that it's more difficult compared to in-person teaching. Many attempt to replicate their traditional classroom methods in the online setting, even though this may not be as effective. While one solution is to encourage students to keep their cameras on, this isn't always feasible due to internet issues. It's worth noting that some students mentioned that they preferred physical classrooms because these environments foster a better study environment with the presence of peers.

Home setting

During synchronous online sessions, the students' home environment can interfere with their learning. At times, they lack a designated study space and may find themselves in the same room as their siblings, who might also be attending classes simultaneously, or their parents engaging in conversations.

Availability of resources

The effective implementation of a Blended Learning Model faces a major challenge due to limited financial resources. Many people don't have access to 24/7 electricity, making it difficult to participate in synchronous online sessions during power outages. Additionally, not all families can afford multiple devices for their children, often having to share a single phone. Furthermore, many don’t have the means to purchase WIFI/3G data bundles necessary to accommodate the needs of online classes. Moreover, a lack of online resources tailored to the Lebanese curriculum forces many teachers to generate their own content, resulting in a time-consuming process.

Place of AI

The introduction of AI into education has brought about significant changes in teaching practices. While some teachers express skepticism about its impact, others are optimistic. The skeptics among them believe that students may become overly reliant on AI for completing their homework and exams, potentially making it harder to evaluate their true understanding and abilities. They fear that students might not learn to do the work themselves. On the other hand, optimistic educators view AI as a globally available tool that should be embraced. They see potential in integrating AI into teaching methods, such as using it to help students find information. They believe AI can enhance the learning process, much like calculators, and argue that students should be taught how to use AI effectively. To adapt to this change, teachers need to develop innovative evaluation methods that go beyond seeking definitions or general opinions and instead encourage students to express their personal thoughts and assess their thought processes rather than just the outcomes. Moreover, with the accessibility of the information, the role of teachers is changing from an information provider to a learning experience designer

where they make use of all the tools available to create a curriculum and explanation provider to help students grasp concepts more deeply.

Discussion

To counter the specific challenges of Lebanon and ensure the continuity of education, a Blended Learning Model was created for enhanced efficiency.

The creation of the Blended Learning Model was based on:

- The literature reviews;
- The results and recommendations of the research and the data analysis;
- The consultation of an educational committee.

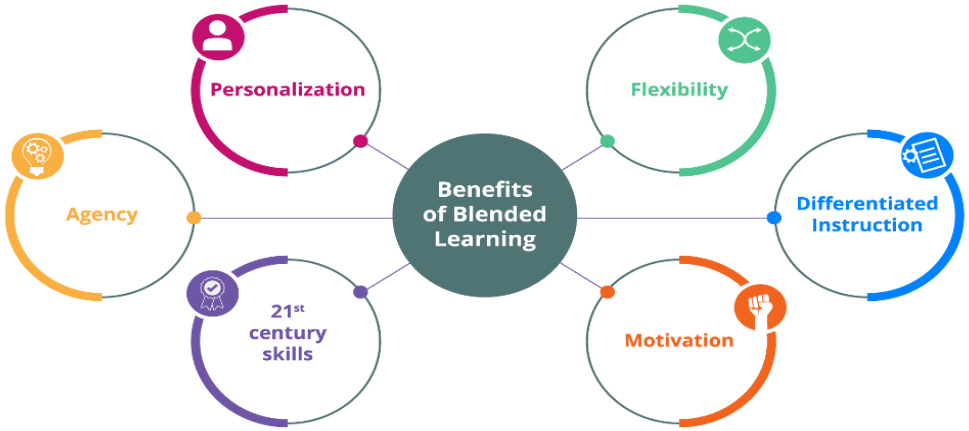
Why Blended Learning?

The literature review shows that Blended Learning is highly efficient as it leverages the advantages of both online and face-to-face instruction.

One of its primary benefits lies in differentiated instruction, allowing educators to tailor content and teaching methods to individual learning styles and paces. Additionally, Blended Learning enhances flexibility by providing learners with the opportunity to access resources and engage in coursework at their own pace, promoting self-directed learning. This approach not only equips students with essential 21st-century skills, such as digital literacy and information fluency but also cultivates agency and motivation as learners take an active role in their education.

Figure 8:

Benefits of Blended Learning



Note. Retrieved from "*Lalmoudaress*" (2022), developed by Lebanese Alternative Learning. https://lalmoudaress.com/course/index.php?categoryid=60

For additional information concerning *Lalmoudaress* platform, please see Appendix G.

To begin with, it was necessary to have a clear understanding of what "Blended Learning" is in the framework of the proposed model. We adopted the following definition:

> Blended Learning is a seamless connection between **synchronous** (virtual and face-to-face) and **asynchronous** (at the learners' own pace and time) learning with the **strategic integration of technology.**

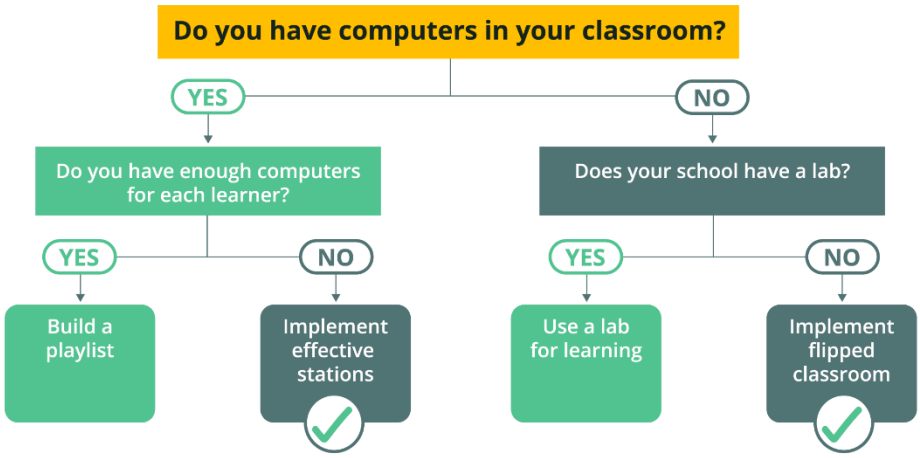
LAL's aim was to create a Blended Learning Model adapted to the Lebanese context that can mitigate the identified challenges and limitations.

To address the challenge posed by the lack of resources aligned with the Lebanese curriculum, the Blended Learning Model was designed with Tabshoura, a free highly interactive e-learning platform developed by LAL, at its forefront hence the title of the developed model: *Blending with Tabshoura* (For additional information concerning the *Tabshoura* platform, please see Appendix H).

1. To address the challenge posed by electricity cuts and internet issues, LAL's Tabshoura in a Box and Tabshoura App offer an innovative and practical solution by enabling students to access the interactive educational content offline. This feature ensures that students can continue their learning even in circumstances where electricity is unreliable or internet connectivity is problematic. The offline access capability enhances the accessibility and resilience of the educational resources, providing a reliable option for students to engage with educational materials irrespective of external connectivity challenges.
2. To effectively address the challenge of limited device availability both at school and at home, it is recommended to adopt innovative teaching methodologies, adapted to the school level. Among the identified Blended Learning Models, only rotation models were found to be adaptable to the school level, as other models were deemed effective primarily in university settings. To determine the most efficient rotation model in the Lebanese context, we followed the decision tree below:

Figure 9:

Decision Tree for Selecting the Most Appropriate Rotation Model



Note. Retrieved from "Lalmoudaress", (2022), developed by Lebanese Alternative Learning. https://lalmoudaress.com/course/index.php?categoryid=60

Based on the above figure, the most appropriate model was one requiring the least number of devices. Hence, station rotation and Flipped classroom were integrated in the suggested model. The station rotation model involves organizing learning stations equipped with various resources, allowing students to move between them and strategically use the available devices. This approach ensures that each student has access to technology during designated parts of their learning experience. On the other hand, the flipped classroom model shifts the delivery of instructional content online, reducing the reliance on devices during in-person class sessions.

3. Online teaching faces a training challenge. First, there is a need for training both teachers and students on the practical use of essential tools. Second, teachers require training on pedagogical methods and digital pedagogy.

- Training on tools: Teachers and students alike require comprehensive training in effectively using various tools. This includes platforms like Microsoft Teams and skills related to creating presentations using tools like PowerPoint.

- Training on pedagogical methods: Beyond traditional instructional methods, teachers require specialized training in pedagogical methods, for both synchronously and asynchronously teaching that prioritize student engagement and individualized learning. One aspect of this training is the incorporation of differentiated instruction, recognizing that students learn at different paces and through various modalities. This training will equip teachers with the skills to create a student-centered environment, where the focus extends beyond content delivery to fostering active participation and critical thinking. It involves understanding diverse learning styles and tailoring instructional strategies to meet the unique needs of each student.
- Training on digital pedagogy: Beyond tool proficiency, teachers need specialized training in digital pedagogy. This training will empower them to select and employ the appropriate tools according to the specific course and educational objectives. In essence, it involves aligning the choice of tools with the pedagogical activities they intend to undertake. For instance, educators need to determine which software best suits collaborative tasks, moving beyond tool mastery to strategic tool selection for various pedagogical activities.

To effectively address the need of training for the practical use of tools, pedagogical methods, and digital pedagogy, Lalmoudaress an educator platform developed by LAL was used.

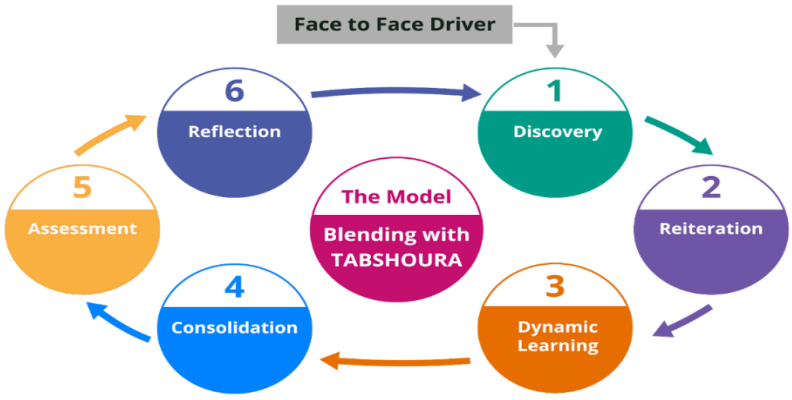
4. To address the problem related to student's assessment, one proposed solution is to shift the focus of evaluation from mere grade acquisition to a more holistic approach centered on knowledge acquisition and comprehension. Evaluation should not prioritize memorization, but instead emphasize critical thinking and personalized assessment of students' skills.

The Blended Learning Model: Blending with Tabshoura

The following diagram summarizes the six steps of the model. Each step is then detailed separately.

Figure 10:

Blending with Tabshoura Model



Note. Retrieved from "Lalmoudaress" (2022), developed by Lebanese Alternative Learning. https://lalmoudaress.com/course/index.php?categoryid=60

Face to Face Driver
The teacher engages the learners by stimulating their curiosity using different instructional tools such as **visible thinking routines**.

Visible Thinking Routines (VTRs) are a set of strategies that help students make their thinking visible. Some of these routines can be used to motivate students.

1. See-Think-Wonder

In this VTR, students observe a visual and answer the following questions:

What do you see?

What do you think about that?

What does it make you wonder about?

2. KWL Chart

K-W-L is an acronym that stands for "Know," "Want to Know," and "Learned."

What they already know about the topic

What they want to know (or questions they have) about the topic

What they learned (after the lesson or assignment)

Note: This step needs to take place prior to learners going home. Its duration depends on the learning objective covered.

1. Discovery in a Flipped Mode

Learners discover the concept **asynchronously** using the following tools: **Tabshoura** and a **worksheet.**

- At home, they access Tabshoura and engage in the assigned activity, at their own pace and time.
- They follow instructions, answer a set of questions on the worksheet and come up with questions to be discussed in class.
- They identify the problem to be solved.

This step allows a primary evaluation of the acquisition of the concept at the **lowest level of Blooms Taxonomy**.

2. Reiteration

Learners lead a discussion **synchronously** in the presence of the teacher who acts as a facilitator.

- They use their findings and questions from step 1 to tackle misconceptions and reinforce acquired notions.
- The teacher invites the learners to reflect on the learning objective.

3. Dynamic Learning

Learners engage in dynamic learning synchronously using strategies such as:

Collaborative work (Think-Pair-Share, Jigsaw, Peer Review…).

Station Rotation

Interactive direct instruction

Problem Solving

This step allows application of concepts using higher thinking order in Blooms Taxonomy to come up with a product.

4. Consolidation

Learners deepen their learning. This is done **synchronously** or **asynchronously**.

- They share the outcome of their work or findings through discussions, presentations...
- They tackle any remaining misconceptions and reinforce acquired notions.

5. Assessment

Learners are assessed **synchronously or asynchronously.**

- A variety of assessment strategies such as observations, formative and summative assessments may be used.
- Learners can be involved in their assessment through **self-evaluation** and **peer-evaluation**.

6. Reflection

Learners are invited to reflect on the whole process by answering questions such as:

- What was the most interesting thing in the process?
- Was the learning objective achieved?
- What would you have changed in the process?

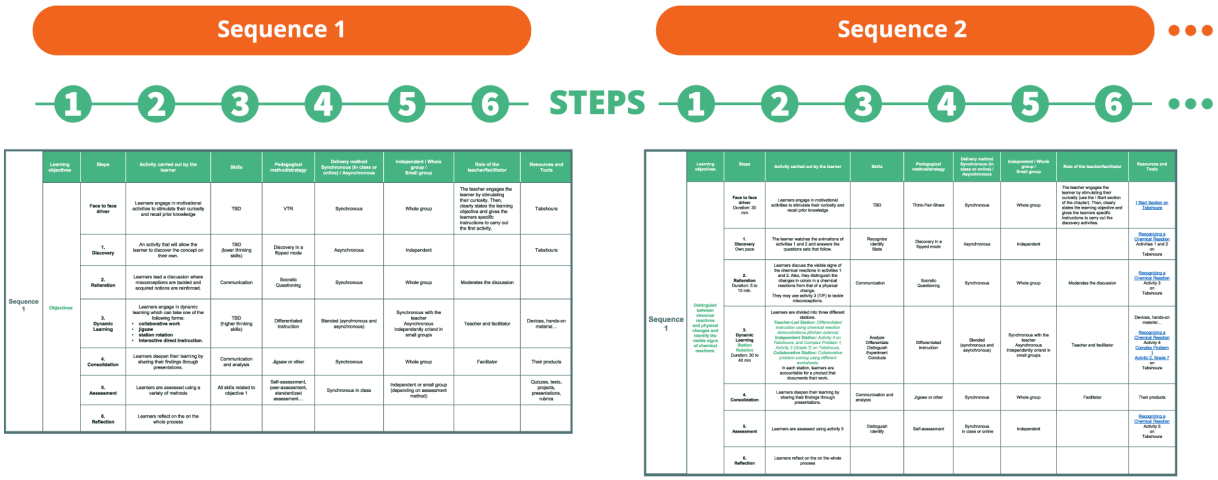
Note: This step is a reflection on both the process and the learning. It is recommended that learners document the answers to these questions in their journal.

Once the chapter has been divided in terms of sequences or pedagogical objectives, the instructor has to write a unit plan that features the sequence of activities that the student will perform in order for learning to happen.

It is within the educator's discretion to determine whether to apply the instructional cycle of the model to a single objective, a series of objectives or the entirety of the chapter. This will depend on the discipline and the grade level.

Figure 11:

Unit Plan Template



Note. Retrieved from "Lalmoudaress" (2022), developed by Lebanese Alternative Learning. https://lalmoudaress.com/

Conclusion

In conclusion, the many advantages of Blended Learning make it a potential solution to the educational disruptions throughout the world in general and in Lebanon in particular. The many challenges led LAL, with the support of Expertise France, to create a Blended Learning Model tailored to the Lebanese context **"Blending with Tabshoura".** As a next phase, the fellows from Teach for Lebanon NGO will be trained on this model. Then, the fellows will train 100 teachers on the pedagogical model, and the school IT on the technical aspects: administer the users' registration and download and use the offline app. Moving forward, trained teachers will implement the Blended Learning Model in their classes, targeting 2,000 students.

The importance of this stage cannot be emphasized enough as the effectiveness of any approach ultimately depends on the skills and flexibility of the teachers who implement it. The sharing of knowledge, from the educators to the teaching community serves as a crucial link between theoretical concepts and practical application. By utilizing the expertise of those who have completed the training our goal is to establish a scalable framework for professional growth.

Regular evaluations and feedback mechanisms will offer insights into the model's strengths and areas that need improvement. This iterative approach will not only help us assess results but also enable us to make informed adjustments.

References

Abbas, T. (2016). “Social factors affecting students’ acceptance of e-learning environments in developing and developed countries: A structural equation modeling approach”. *Journal of Hospitality and Tourism Technology*.

Abi Raad, M. E., & Odhabi, H. (2021). “Hybrid learning here to stay”. *Frontiers in Education Technology*, 4(2), 121-131.

Anderson, Lorin, David Krathwohl, Peter Airasian, Kathleen Cruikshank, Richard Mayer, Paul Pintrich, James Raths, and Merlin Wittrock. (2001) “A Taxonomy for Learning, Teaching, and Assessing: A Revision of Bloom's Taxonomy of Educational Objectives”, *Abridged Edition*. White Plains, NY: Longman.

Assaf, J., & Nehmeh, L. (2022). The Remote Learning Experience in Lebanon: Learners’ attitudes and practices. *Pedagogical Research, 7(*1), em0115.

Blended Learning Definition. Christensen Institute (2014). https://www.christenseninstitute.org/blended-learning-definitions-and-models/

Fisher, J. F., Bushko, K., & White, J. (2017). “Blended Beyond Borders: A Scan of Blended Learning Obstacles and Opportunities in Brazil, Malaysia, & South Africa”. *Clayton Christensen Institute for Disruptive Innovation.*

Garrison, D. Randy, and Heather Kanuka. (2004). “Blended Learning: Uncovering Its Transformative Potential in Higher Education”. *The Internet and Higher Education* 7 (2): 95–105.

Graham, C. R. (2006). “Blended learning systems”. *The handbook of blended learning: Global perspectives, local designs*, 1, 3-21.

Horn, M. B., & Staker, H. (2014). “Blended: Using disruptive innovation to improve schools” (1st ed.). *Josey-Bass*.

Hrastinski, S. (2008). “Asynchronous and synchronous e-learning.” *Educause quarterly,* 31(4), 51-55.

Islam, S., Baharun, H., Muali, C., Ghufron, M. I., el Iq Bali, M., Wijaya, M., & Marzuki, I. (2018). “To boost students’ motivation and achievement through blended learning”. *In Journal of Physics: Conference Series*, 1114 (1).

Linder, K. E. (2017). “Fundamentals of hybrid teaching and learning”. *New Directions for Teaching and Learning*, 140, 11-18.

Masadeh, R., Tarhini, A., Mohammed, A. B., & Maqableh, M. (2016). “Modeling factors affecting

student's usage behaviour of e-learning systems in Lebanon". *International Journal of Business and Management*, 11(2).

Miller, A. (n.d.). Blended Learning: Strategies for Engagement,

https://www.edutopia.org/blog/blended-learning-engagement-strategies-andrew-miller

Ministry of Education and Higher Education (MEHE) «Lebanon Five-Years Educational General Plan 2021-2025 ».

Nguyen, T. (2015). "The effectiveness of online learning: Beyond no significant difference and future horizons". *Journal of Online Learning and Teaching.*

Rouadi, N. E., & Anouti, M. F. (2020). "The online learning experiment in the intermediate and secondary schools in Lebanon during the coronavirus (COVID-19) crisis". *Online learning*, 7(7).

Saichaie, K. (2020). "Blended, flipped, and hybrid learning: Definitions, developments, and directions". *New Directions for Teaching and Learning*, 2020(164), 95-104.

Save the Children (2023) « One Million Children Left Without Education In Lebanon After Public schools Shut Their Doors ».

Sharma, P. (2010). "Blended learning". *ELT journal*, 64(4), 456-458

Truitt, A. A. (2016). "A case study of the Station Rotation blended learning model in a third grade classroom". *University of Northern Colorado*.

UNESCO. (2020). “Startling digital divides in distance learning emerge”.

United Nations Economic and Social Commission for Western Asia (ESCWA). (2021). *Multidimensional Poverty in Lebanon*. Retrieved from https://www.unescwa.org/publications/multidimensional-poverty-lebanon

Watson, J. (2005). “Keeping pace with k-12 online learning: A review of state-level policy and practice”. *Learning Point Associates/North Central Regional Educational Laboratory (NCREL)*.

Wazzan, M. (2020). “Learning Remotely as the Only Resort: How is Lebanon Doing”. *Al Fanar Media.*

World Bank. (2023). *Lebanon Economic Monitor: The Normalization of Crisis Is No Road for Stabilization*. Retrieved from https://www.worldbank.org/en/news/press-release/2023/05/16/lebanon-normalization-of-crisis-is-no-road-to-stabilization

Appendices

Appendix A. Interview questions for academics and pedagogical experts

Interview guide: Academics and pedagogical experts
1. How do you identify blended versus hybrid learning/teaching? 2. In your own practice, did you implement any blended learning model? 3. In your opinion, which one is the most efficient? 4. What challenges still exist? 5. In your opinion, what does an ideal model look like? 6. In light of AI such as ChatGPT, what will the future in education look like?

Appendix B. Interview questions for officials

Interview guide: Officials
1. How did the government respond to the COVID-19 crisis in the educational system? 2. What were its successes? 3. What were its challenges? 4. Is there an emergency plan to tackle the ongoing educational crisis? 5. What is the government's vision regarding education?

Appendix C. Interview questions for Principals

Interview guide: Principals
1. How did you cope with the online period during COVID-19? 2. What platform/tool did you implement in the schools 3. Was it efficient? 4. What were the challenges? 5. What lessons did you learn? 6. Did any of those tools still being used by your teachers? 7. Did you provide any training for the teachers? 8. What do you know about blended learning? 9. Will you be interested in introducing blended learning at the school level? Train your teachers to introduce this methodology?

Appendix D. Interview questions for Students and Parents

Interview guide: Students
1. During the period when schools were closed, did you engage in online learning? 2. What difficulties did you encounter? 3. What insights did you gain from the experience?
Interview guide: Parents
1. During the time when schools were closed, did your children participate in online learning? 2. What challenges did they face? 3. What lessons do you think they learned from the experience?

Appendix E. Interview questions for Teachers

Interview guide: Teachers
1. Context 1. Did you ever mix face-to-face and online teaching? (This will help us identify whoever has used hybrid learning.) 2. Did you ever use digital tools in your teaching? (This will help us identify whoever has used blended learning.) 2. **Description of Blended Teaching Experience** 1. What resources and tools did you use? Which platforms were implemented/utilized? 2. How effective were these resources? 3. How did these platforms serve their purposes of the discipline (alignment with the curriculum, relevancy, age-appropriate, etc.)? 4. How did you know about the resources? What are the research methods you used to find these resources? 5. Who collaborated with/supported you to find the resources you used? 6. What kind of resources were hard or almost impossible to find? 7. How did you master using the tools that you found?

8. How much time do you need to find and develop resources?
9. What are some other tools you want to learn to use? why?
10. Share your experience and describe the flow of your sessions. (This will give us an insight into the pedagogical approaches they may have used.)

3. Identification of Challenges and Success Stories

1. Name two things you found efficient in your teaching and two things you found challenging.
2. Elaborate on both the challenges and success stories you have identified
3. What challenges other than the ones related to preparing and delivering instructions may you identify? Label the challenge and explain it.
4. Wonder about the challenges particularly related to instructional and professional learning resources
5. What factors prevented/stopped you from having a successful classroom/teaching?
6. What strategies did you follow to solve these challenges?
7. What success stories related to blended learning experiences did you take with you?

Appendix F. Survey questions for Teachers

Survey: Teachers

Purpose: Lebanese Alternative Learning is an NGO dedicated to providing all learners in Lebanon transformative digital learning experiences to break the cycle of inequalities in educational opportunities, build a better future and lead the change we want to see in our society. We are currently gathering data to develop the most effective Blended/Hybrid learning model for the country. As part of this process, we are collecting information on teaching experiences over the past three years. Your input is crucial in shaping this model, as it will contribute significantly to its design and implementation.

Q1a. Sex:

- Man
- Woman

Q1b. Age:

- 18-25
- 26-35
- 36-45
- 46-55
- 56-65
- 66+

Q2. In what school do you teach?

- Open question

Q3. How long have you been teaching?

- 0-3 years
- 4-10
- 11-15
- 16-20
- 21-25
- 26-30
- 31+

Q4. What grade(s) do you teach?

- KG1
- KG2
- KG3
- Grade 1/EB1
- Grade 2/EB2
- Grade 3/EB3
- Grade 4/EB4
- Grade5/EB5
- Grade 6/EB6
- Grade 7/EB7
- Grade 8/EB8

- Grade 9/EB9
- Grade 10/EB10
- Grade 11/EB11
- Grade 12/EB12

Q5. What subject(s) do you teach?

- Mathematics
- Physics
- Chemistry
- Biology
- Science
- History
- Philosophy
- Economics
- Sociology
- Arabic
- English
- French
- Art
- Other, please specify

Q6. When the schools were closed, what kind of teaching methods/practices did you implement?

- Synchronous learning (video conferencing platforms such as Zoom, Skype…)
- Asynchronous learning (pre-recorded video lessons, online reading, and other resources...)
- Multimedia presentations (Slideshows, Videos, Interactive simulations..)
- Gamification
- Collaborative Projects
- Online discussion and collaboration tools
- WhatsApp
- None
- Others, please elaborate

Q7. Looking back at the past three years, have you used any of the listed electronic devices to deliver your course?

- Desktop
- Laptop
- Tablet
- Smartphone
- No

Q8. Looking back at the past three years, when teaching, have you used any of the listed tools?

- Learning management systems (i.e. Microsoft teams, Moodle, google classroom…)
- Video conferences (i.e Zoom, Skype, WhatsApp…)

- Recorded material (video and/or audio)
- Reading material
- No
- Other, please specify

Q9. When teaching, do you use any of the below-listed learning tools?

- Desmos
- G Suite
- Jamboard
- Nearpod
- Padlet
- Wordwall
- No
- Other, please specify

Q10. During these past three years did you teach remotely?

- Yes: **[CONTINUE TO QUESTION 10a]**
- No: **[CONTINUE TO QUESTION 11-12]**

Q10a. What challenge(s) do you face while remote teaching?

- Power Cuts
- Wifi Connection
- Technical bugs
- Difficulty using the tool

- Difficulty to concentrate while working from home or outside of the classroom
- Difficulty in capturing students' attention outside of the classroom
- Difficulty in assessing if the students processed the information
- Difficulty in having group discussions/debates
- Difficulty in addressing the students through a laptop rather than in class
- Difficulty to have one-on-one discussions
- Other, please specify
- None

Q10b. What task(s) do you find the most challenging while remote teaching?

- Instructional design
- Course delivery
- Learning Assessment (making sure the students understood the concepts)
- Engaging students
- Evaluations
- Other, please specify
- None

Q10c. What aspects of remote teaching do you find the most enjoyable?

- Getting to experience a different way of teaching
- The convenience (working from home or outside of the classroom, less time spent on the road, delivering your course on your laptop…)
- Accessible class materials (recorded sessions and shared documents)
- Engaging students

- Improved attendance rates
- Other, please specify
- None

Q11. Reflecting on the past three years, is there anything you would like to share about students' engagement and how do you manage to capture their attention?

- Open question

Q12. Reflecting on the past three years, What would you suggest to improve the whole process of teaching?

- Open question

Appendix G. *Lalmoudaress* Platform

Lalmoudaress is a groundbreaking initiative developed by Lebanese Alternative Learning (LAL) in response to the challenges faced by educators in Lebanon during the COVID-19 pandemic.

The initiative materialized through the creation of a comprehensive platform. It aims at supporting educators in their shift to blended teaching and learning by providing them with a library of resources, including tutorials, lesson plans, interactive modules, engaging worksheets, and insightful assessments.

Our platform is structured into distinct categories, each tailored to meet the diverse needs of educators:

Tabshoura Programs:

- *How to Use Tabshoura:* This subcategory explains how to use Tabshoura, an innovative e-learning platform, with easy step-by-step guides and tutorials.
- *Guides to Co-curricular Projects:* This subcategory allows educators to navigate through guides that provide step-by-step instructions for engaging learners in co-curricular projects using Tabshoura.

Teaching Resources:

- *Pedagogical Methods:* This subcategory allows educators to explore a spectrum of effective teaching methods tailored to various learning styles and educational objectives.
- *Corresponding Lesson Plans:* This subcategory allows educators to access meticulously crafted lesson plans that align with the chosen pedagogical methods.
- *Digital Tools:* This subcategory allows educators to stay ahead in the digital age with tutorials about innovative tools and technologies that can amplify the impact of their teaching strategies.

Professional Development:

This category allows educators to elevate their teaching skills with cutting-edge courses that reflect the latest trends and advancements in education.

Discussion Forum:

This category allows educators to engage in meaningful conversations with fellow educators, sharing insights, discussing challenges, and collectively work towards the continuous improvement of education in Lebanon.

Appendix H. *Tabshoura* Platform

A free platform aligned with the Lebanese Curriculum

Tabshoura is an innovative e-learning platform developed by the Lebanese Alternative Learning, NGO. It offers free access to interactive educational content from KG to grade 9 that aligns with the Lebanese Curriculum and the guidelines of the Center for Educational Research and Development (CRDP).

Innovative pedagogical approaches and diversity of learning styles

Tabshoura distinguishes itself by its design that provides innovative educational approaches and learning styles across different educational stages, going beyond conventional teaching methods:

For **Early Childhood Education (ECE)**, the platform adopts the cognitive apprenticeship methodology for the acquisition of foundational skills.

In Lower Elementary, storytelling is used to enhance comprehension through dialogues and interaction between characters, making the educational journey enjoyable.

As learners progress to **Higher Elementary and Middle School**, Tabshoura employs the discovery methodology, particularly in maths and science, encouraging critical thinking and autonomous exploration of complex concepts.

A transformative digital experience

Tabshoura embodies the transformative potential of technology in education. The reliance on **feedback** and the inclusion of a **retry button** serve as valuable mechanisms for facilitating autonomous learning. These elements not only guide learners through the material but also empower them to take control of their own learning process.

The feedback gives learners a great opportunity to drive their learning journey and develop their analytical skills. If the answer is incorrect, the feedback comes in the form of a guiding question or a hint as to why the answer is wrong. This triggers reasoning and helps the learner reach a deeper understanding of why the right answer is right.

If the answer is correct, the feedback restates the concept or theory to be learned. Learners get an intrinsic reward, that of finding the right answer, which is essential in problem-solving and understanding new concepts.

The **“Retry”** button gives learners the possibility to "retry" as many times as needed until they "get the answer right". This feature reinforces understanding through repeated attempts. The purpose being to learn and acquire the skills to do it.

An ideal tool for blended learning

The seamless integration of technology in blended learning implies the use of an educational platform that primarily fosters self-directed learning. All modules on Tabshoura are designed to be learner-centered giving learners the possibility to learn on their own. Moreover, the modules are constructed in such a way that different sections can be used for different purposes: revision, homework, flipped classroom material, online instruction in a station

rotation model, differentiated instruction…. This makes it an ideal resource for teachers to enrich their teaching experience and give their students agency over their educational journey.

The Tabshoura offline solutions

Tabshoura in a Box: The Box is a library of Tabshoura interactive content. It is a pocket size server, baked on the "Raspberry Pi" technology that can hotspot up to 30 devices and connect them to the Tabshoura customized library.

The Tabshoura App: The Tabshoura app allows users to download educational resources from the Tabshoura platform and use them in offline mode (on both Android and iOS devices), making it a great resource for learners to study at their own pace and in areas with limited internet connectivity.