Examining the Role of Digital Tools and Online Resources in Supporting Moroccan High School Students' Learning During Teachers' Strikes

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Abstract:

This research explores students' learning experiences using digital tools during teachers strikes focusing on their ability to maintain interest in learning and manage their educational goals independently. A survey involving 82 Baccalaureate students, expected to sit for either a Regional or a National exam at the end of the 2023-2024 school year, was conducted to examine students' satisfaction concerning using digital tools during Moroccan teachers' strikes along with the challenges and impact on learning outcomes. The findings revealed that while these tools were essential to sustain students' learning outside classroom walls, they could not replace nor compare to in-class face-to face interaction. These results are consistent with the broader research on the limitations of digital learning, which emphasizes the importance of human interaction, immediate feedback, and guided instruction-elements that are difficult to achieve through online platforms (Vygotsky, 1978).

Keywords: Digital tools, Online Resources, Autonomous Learning, independent learning

Introduction:

On October 6th 2023, Moroccan public school teachers in primary, secondary, and high schools engaged in strikes and called off classes as a reaction to a new law brought by the ministry of education. As a result, classrooms were shut down and classes canceled. This is not the first time when students find themselves on their own. The situation is reminiscent of 2019 after the break out of COVID-19 when the ministry of education decided to shut down schools and shift to online teaching. However, this time students are left on their own to face a new challenge. Teachers decided to boycott teaching in all forms. Consequently, students were obliged to manage their learning independently and find ways to sustain it. Hence, questions must be raised about the extent to which these students are able to set their learning goals, make choices about what to learn and how to learn it. Living in the digital era has definitely offered these students a wide variety of online resources and digital tools to extend their learning outside the classroom walls. However, challenges persist. This article delves in students' experiences during this period of strikes and measures their satisfaction with the digital tools and online resources used to sustain learning. It is necessary to find out about the usefulness of these resources and to what extent they have been effective for students to support their learning independently and autonomously.

Theoretical Background:

Living in a digitally connected world has offered students a wide variety of educational resources. Students

nowadays are armed with a variety of digital tools ranging from cellphone, tablets, and computers. This allows them to connect to the world and access a variety of web educational content. However, the amount of available data as well as the validity of this content might be overwhelming and could pause a real challenge for learners if they are not equipped with the right cognitive skills to select appropriate educational content, set their own learning goals, and evaluate their learning outcomes.

Numerous digital learning resources that address the needs of students in a variety of subject areas, such as reading, writing, communication, and mathematics, are offered on multiple online platforms. Unlike in the past, when teachers and books were the only sources of knowledge, students nowadays can access knowledge in many ways with the help of their digital devices. Hence, various modes of learning have occurred either to replace or compliment in person learning including synchronous, asynchronous, blended, and computer assisted learning.

Asynchronous learning has gained significant traction over the past two decades, driven by advances in technology and the increasing availability of online platforms (Garrison & Anderson, 2003). Unlike synchronous learning, where students and instructors interact in real-time, asynchronous learning provides students with the flexibility to engage with course materials at their own pace, usually through pre-recorded lectures, online readings, discussion boards, and assignments. This mode of learning has been particularly beneficial in accommodating diverse learning needs and schedules, offering a level of accessibility and autonomy that is not possible in traditional classroom settings.

The use of digital tools and online resources has been central to the growth of asynchronous learning. Platforms such as Moodle, Google Classroom, and Blackboard have become commonplace in schools and universities, providing a centralized hub for students to access learning materials, submit assignments, and interact with peers and instructors asynchronously (Garrison, 2011). Furthermore, resources such as educational videos, podcasts, eBooks, and interactive simulations enable learners to engage with content in multimodal ways, catering to various learning styles and preferences (Mayer, 2009). These digital tools not only enhance accessibility but also foster a more flexible and personalized learning experience, where students can progress through the material according to their own pace and understanding.

Nevertheless, learning is a process that requires a complex set of cognitive as well as affective capacities in learners to be able to carry out learning independently and effectively. Throughout elementary, secondary, and high school, Moroccan students' learning takes place inside the classroom and they are generally dependent on the teacher. Teachers are fully in charge of lesson planning, choosing appropriate content and practice material, as well as evaluating students' progress either through formative or summative assessment. Students are expected to attend classes and follow teachers' instructions. Homework is assigned at the end of class to be corrected in the next class.

The Impact of Teacher Strikes on Student Learning

Not only did teacher strikes disrupt the continuity of education, leaving students without structured classroom instruction for over three months, but they also put students' learning autonomy to test. The effects of teacher strikes on student learning can be far-reaching, especially if the disruption occurs over an extended period, such as several weeks or months. Research has shown that prolonged absences from school can lead to learning loss, particularly in core subjects such as mathematics, reading, and writing (Baker et al., 2013). The gap in learning that occurs during strikes can have long-term consequences, as students may fall behind in their academic progress, leading to gaps in knowledge and skills that persist even after the strike ends.

Given the negative impact of teacher strikes on students' learning, the use of digital tools and online resources offers a potential solution to mitigate these effects. During periods of teacher absence, online platforms can provide students with the necessary resources to continue their learning independently. For example, learning management systems (LMS) can host instructional content such as video lessons, reading materials, and interactive quizzes, enabling students to engage with the curriculum without the need for a physical classroom (Sitzmann, 2011). By providing students with immediate access to educational content, digital tools can reduce the disruption caused by teacher strikes and maintain a sense of educational continuity.

Enhancing Engagement and Motivation Through Online Resources

One of the key advantages of digital tools and online resources in asynchronous learning is their ability to enhance student engagement and motivation. Research has shown that interactive and multimedia-rich online resources can increase student interest and encourage active participation (Zhao et al., 2005). For instance, educational videos and simulations can provide students with visual and experiential learning opportunities that are often more engaging than traditional textbooks or lectures. Additionally, discussion boards and collaborative online platforms foster peer interaction, allowing students to share ideas, ask questions, and receive feedback asynchronously. This peer-to-peer interaction can be particularly valuable during teacher strikes, as it creates opportunities for students to engage with their learning community even in the absence of direct teacher supervision. However, in the Moroccan context, students didn't interact with their teachers throughout the period of strike. Instead, they roamed the internet for any free material related to their school curriculum. Thus shifting from being completely teacher-dependent to fully responsible for their own learning.

Moreover, the flexibility of asynchronous learning allows students to take ownership of their learning. When students can choose when and how they engage with the materials, they are more likely to feel a sense of control and autonomy over their educational experience, which can contribute to increased motivation (Deci & Ryan, 1985). In the context of teacher strikes, this sense of autonomy becomes even more critical, as students may need to take on a greater level of responsibility for their own learning without the structure provided by regular classroom sessions.

Addressing Challenges in Asynchronous Learning

Despite all the advantages of digital tools and online resources in asynchronous learning, there are also challenges that need to be addressed in order to ensure that these resources are effective. One key challenge is the issue of digital literacy. While many students are proficient in using digital devices for social and entertainment purposes, not all are equipped with the skills needed to navigate educational technology effectively (Mishra & Koehler, 2006). this is to say that students might be able to surf the net for entairnment purposes, but since they are not used to use them for learning goals. Hence, equiping students with adequate support and training in using digital platforms for learning is essential for maximizing the effectiveness of asynchronous learning. One more challenge is the potential for student isolation in online environments. Asynchronous learning, while being flexible, can sometimes lead to feelings of disengagement or detachment from the learning community, particularly if students lack opportunities for real-time interaction (Garrison & Vaughan, 2008). During teacher strikes, this sense of isolation was amplified, as students missed the social aspects of traditional classroom settings.

In conclusion, digital tools and online resources play a crucial role in supporting asynchronous learning, particularly during disruptions such as teacher strikes. By offering flexible access to instructional content, fostering engagement and motivation, and enabling independent learning, these resources help mitigate the negative effects of school closures and teacher absences. However, challenges such as digital literacy and student isolation must be addressed to ensure the effectiveness of asynchronous learning environments.

Research Objectives:
- To Explore students' overall satisfaction with digital tools during educational disruptions and the effectiveness of specific digital tools in facilitating their understanding and comprehension of academic content during teachers strikes.
- To investigate the challenges and concerns related to using digital tools including obstacles that may hinder their learning outside the classroom.

Research Questions:
1. How do students perceive the effectiveness of digital tools during teacher's strikes?
2. What challenges do students encounter when using DT and online resources for learning outside the classroom?

Research hypotheses:
Hypothesis 1: Students are satisfied with the use of Digital tools and online resources to sustain their learning.
Hypothesis 2: The use of DT and online resources is associated with specific challenges.

Methodology:
The present study followed the procedure of a mixed-method approach to research design. Therefore, a questionnaire was administered among a large sample population to collect numeric data. The questionnaire included yes/no items, a five-point Likert scale items, as well as some open-ended items.

1. Context and participants:
This study targeted both 1st and 2nd year Moroccan high school students from three different urban high schools in the city of Fez. The reason behind choosing this category of students is that both 1st and 2nd year students are expected to sit for major find exams at the end of the school year and therefore they have strong motivation to sustain their learning amid their teachers' strike. The questionnaire was administered using google forms to ensure anonymity and offer students sufficient time to answer the questions carefully. The resulting sample consisted of 82 students. Male participants made up 32 (39 %) while female participants made up 50 (61 %). As for their grade level, 65.9 % were 1st year baccalaureate(11th grade) whereas 34.1% were 2nd year baccalaureate (12th grade).

Table1: Participants' Information

Variable	Categories	N
Gender	Male	30
	Female	52
	Total	82
Grade Level	1st bac	65,9
	2nd bac	34,1

2. Data collection:

A questionnaire was conducted among both 1st year and 2nd year baccalaureate high school students who are expected to sit for a regional and a national exam by the end of the 2023-2024 school year in June. To collect the data, the questionnaire as an instrument was employed. The questionnaire used a five-point Likert scale ranging from 1 to 5 to measure different aspects related to students' use of DT and online resources including students opinion, satisfaction, quality and use frequency of DT. In the questionnaire, Disagree = 1, Strongly disagree = 2, Neutral = 3, Agree = 4, and Strongly Agree = 5, or students' satisfaction, in which Very Dissatisfied = 1, 2=Dissatisfied, 3=Neutral, 4=satisfied, 5= very Satisfied. Also, some of the items in the survey included Yes/No questions. The choice of these two types of scales was highly based on the type of questions. Since the validity of the results depends on the data collected and the instrument used, the items in the questionnaire were all devised meticulously based on academic norms and related research literature. Moreover, the questionnaire included open-ended questions as well to include quantitative data.

3. Data Analysis Procedures:

Following collecting the data, a descriptive analysis of each item was carried out to ensure a through synthesis of the results and to relate the results to the study questions. Participants' responses were categorized and analyzed based on their grade level and gender. Each item was analyzed separately and carefully.

## Results and Discussion:

1. Perceived Effectiveness of Digital Tools and online resources.

67 (81.7%) participants confirmed that they used DT for educational purposes during teachers strikes, while only 16 (19.5%) denied using any DT to study. In a follow up question about the type of the used resources, most of the participants confirmed that they resorted to YouTube videos and channels as well as Instagram reels and live broadcasts to seek content related to the curriculum. Responses also included educational websites such as *alloschool* and *kezakoo*. 35.4% of the participants agreed that using digital tools helped them understand academic content and 15.9% strongly agreed on that. However, 32.9% remained neutral about this questions. In the same way, 39% of respondents agreed that the use of digital tools positively impacted their learning outcomes and 12.2% strongly agreed on that, too. Meanwhile, 12.2% disagreed on that. As for the use of these tools itself, the majority of participants agreed that it was

easy to use and access such tools.

10 participants showed their complete dissatisfaction with the use of digital tools during teachers' strikes and believed that these tools could never replace in class learning. 16 other participants confirmed the same view and 24 participants remained neutral. On the other hand, only 6 participants (7.3%) could confirm that the they were very satisfied with the use and effectiveness of DT during teachers' strikes. Figure 2 illustrates these findings.

Figure 2: Students' satisfaction with the use of DT for educational purposes.
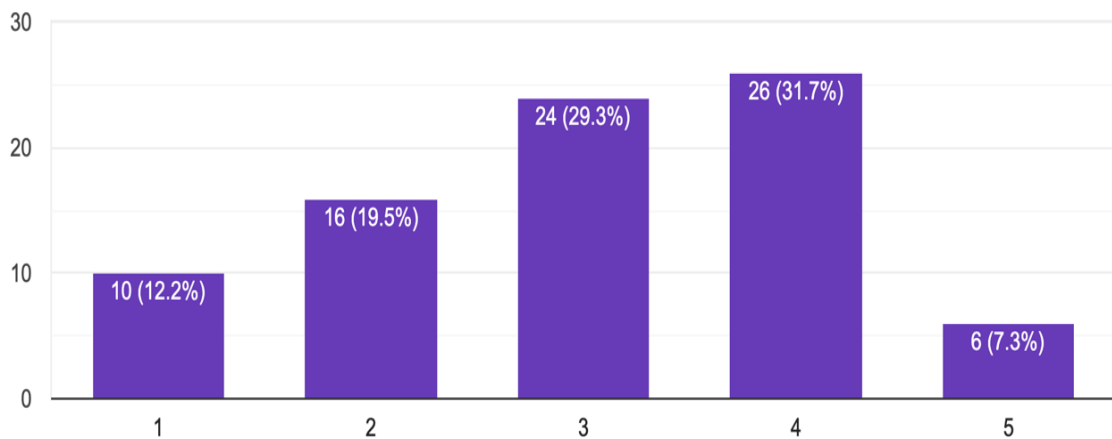
1= Very dissatisfied   2=Dissatisfied   3= Neutral   4=Satisfied   5=Very Satisfied

As for the frequency of the use of DT for educational purposes, figure 3 shows how often participants used DT during the period of strikes to search and find educational content related to the school curriculum. 46.3% (38 participants) acknowledged using their Digital devices on a daily basis to find content related to their school lessons. Whereas only 4.9% denied doing so.

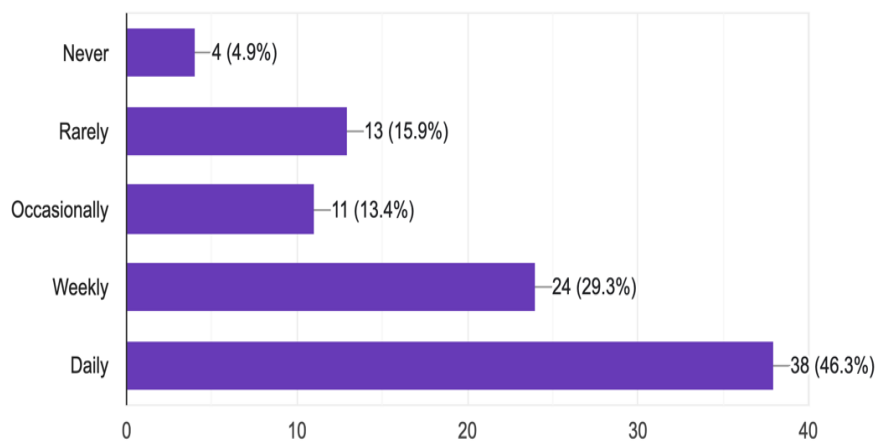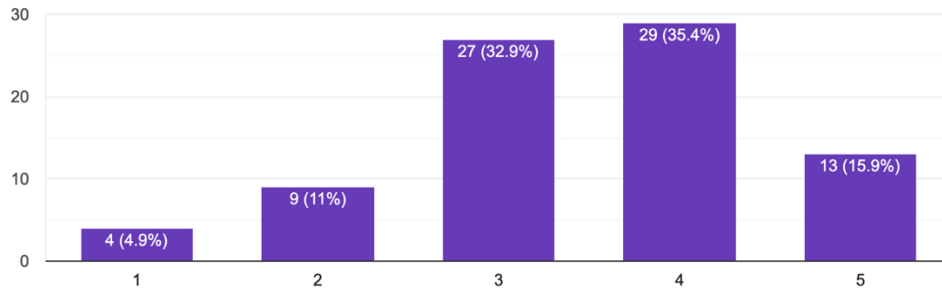**Figure 3: Frequency of the use of DT to search educational content**

Figure 4: Student's perception of DT efficiency

2.2. The digital tools helped me understand the academic content. 1= Strongly disagree,
2=Disagree, 3=Neutral, 4=Agree, 5=Strongly Agree
82 responses

The graph above shows a positive correlation between the use of DT and independent learning. The majority of participants confirmed their positive perception of the use of DT to enhance their learning in the absence of in-person teaching. However, 32.2 % remained neutral which shows that it's hard for participants to affirm their satisfaction with these tools and that they have doubts about their learning results and they cannot decide on their efficiency.

**Figure 5: Students' Perception of Digital Tools Impact**
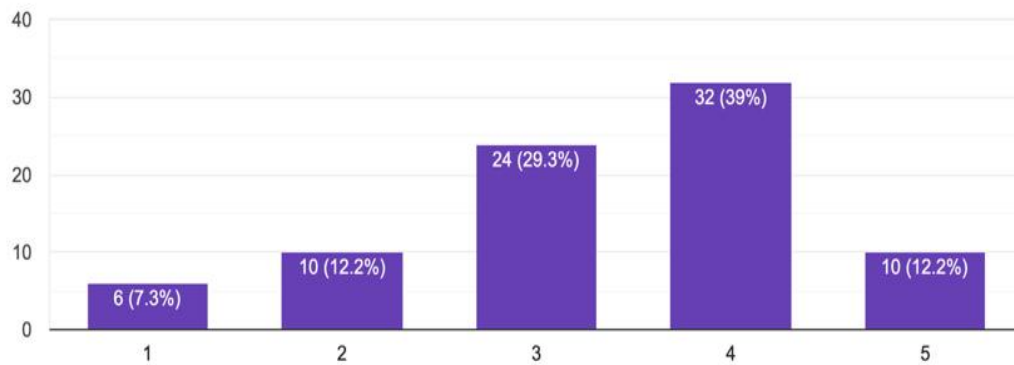
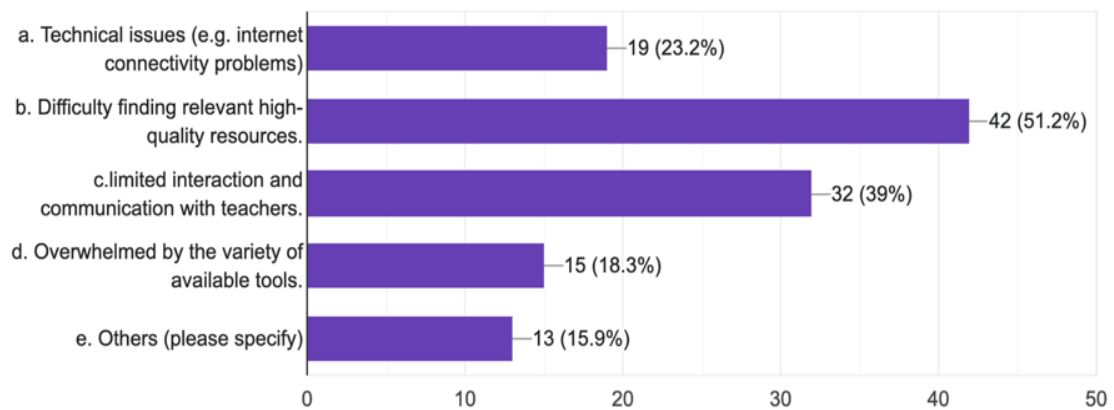## 2. Challenges and Benefits:
a. Challenges

The second part of the questionnaire included 4 elements to investigate the challenges and benefits related to DT use during the period of teachers' strikes in Morocco. Figure 6 shows that 71.1% of participants confirmed meeting challenges while 34.9% denied so.

Figure 6: Challenges

Have you encountered any challenges when using DT and online resources?

■ YES ■ NO
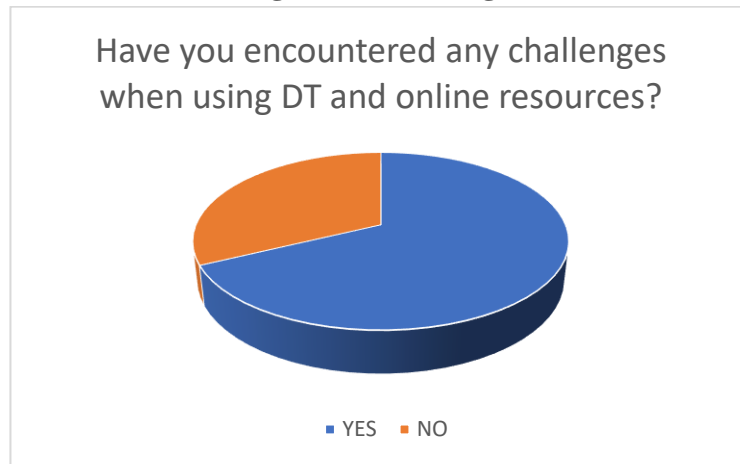
Among the challenges listed finding relevant content and high quality resources ranked at the top as the prevalent challenge with 51.2% of participants positive agreement. The amount of educational resources online is nonfinite which is surely overwhelming for most students. Students' ability to access the web world is undoubted. However, their ability to choose what's most appropriate and relevant to their academic curriculum was definitely put to test during these times of learning outside classrooms. Other challenges included limited interaction and communication with teachers as well as technical issues and internet connectivity problems. 15.9% of the participants said they were overwhelmed by the variety of available resources.

Figure 7: Challenges

a. Technical issues (e.g. internet connectivity problems) — 19 (23.2%)
b. Difficulty finding relevant high-quality resources. — 42 (51.2%)
c. limited interaction and communication with teachers. — 32 (39%)
d. Overwhelmed by the variety of available tools. — 15 (18.3%)
e. Others (please specify) — 13 (15.9%)

b. Benefits

Although the use of DT for educational purposes was characterized by a lot of challenges, participants admitted various benefits associated with the use of DT when attempting to sustain learning during teachers' strikes. Benefits include: access to a variety of learning materials and online resources, improved flexibility when it comes to learning schedule, increased self-motivation and autonomy, authentic material in different languages ... etc. However, only 13.4% of the participants confirmed an enhanced collaboration with peers through online platforms.

Figure 8: Benefits
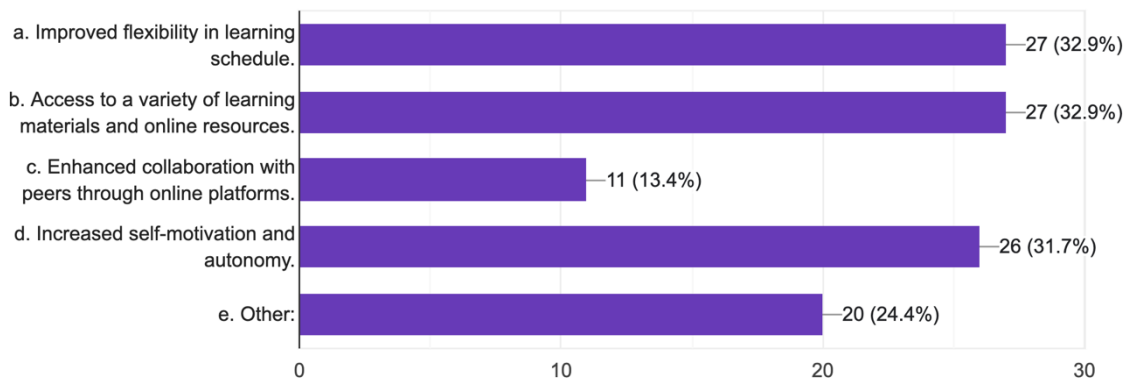
When asked to rate their overall experience with digital learning during teachers' strike, the majority of participants (40.2%) said it was acceptable, 28% said it was good whereas only 9.8% said that it was very good.

To gather more data on students' learning experiences during this period, students' were questioned whether they resorted to in-person tutoring or not. 59.3% responded negatively whereas 40.7% responded positively. An open-ended question was included for participants who responded positively to get more insights about students learning experiences. Below are some of students' testimonials and explanations provided:

"Because direct experience with teachers is a necessary part of learning"

"I resorted to private lessons because, in my opinion, it is not possible for a student to complete the lessons of all the subjects alone. It is possible that if you complete them alone, he will get more tired and will not be able to complete his exercises after that. Likewise, we can make a mistake in one of the lessons if we complete it alone. YouTube, for example, does not give all the correct answers, so we resort to night support classes so that we can balance the times between understanding the lessons and completing the exercises, because the student's role is to understand and the teacher's role is to explain, but our teachers are not here for this! We cannot combine these two for the student to do them alone, because we will be mentally and psychologically tired, as private school students have a teacher explaining to them. They have enough time to complete the various types of exercises, but a student in a public school completes the lesson alone, and if he does not have money for the night support classes, he will not know which exercises to practice and complete."

"To avoid falling behind on lessons and being overwhelmed when it's time to go back to classes again."

" Because I want to catch up and be in the same lessons with the private schools where teachers are not on strike"

"I resorted to private in person classes because *I am afraid that what I am learning at home isn't detailed enough*"

"*I'm not sure about the information on the internet and teachers are more specific with the things we need to learn sometimes I understand a lesson properly but after checking the teachers lesson I get confused with the difference*"

3. Integration of Digital tools into Regular Learning

4.1. Do you believe that digital tools and online resources can be an effective way of learning, even when there are no teachers' strikes?
81 responses

- YES
- NO

55.6%
44.4%
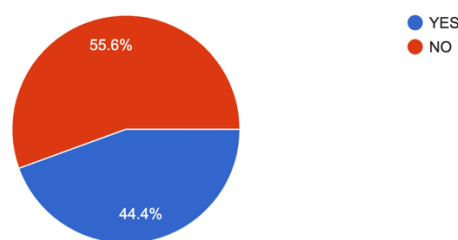
"*If there is no strike, digital tools will be effective for completing knowledge, extra practice, and receiving support in matters that we were not able to understand with the teacher, but the presence of the teacher remains very necessary for digital tools to be effective.*"

Discussion

There is no doubt that the existence of these technologies offers learners new opportunities for practicing and reinforcing academic content outside traditional classroom settings. However, while digital tools may help learners further practice their academic curriculum, they cannot replace the essential in-class learning experiences and the teacher's active role in enhancing student learning. The use of such devices and resources is surely associated with multiple benefits. However, the findings of the questionnaire clearly state the irreplaceable role of in-class learning and thus of that of the teacher.

According to the findings of the questionnaire, 67 participants (81.7%) confirmed that they used digital tools for educational purposes during teachers' strikes, demonstrating the widespread reliance on technology during such disruptions. The flexibility provided by digital tools allows students to access academic content anytime, anywhere, providing an important avenue for self-directed study (Means et al., 2013). For example, 46.3% of the participants reported using digital devices on a daily basis to find content related to their school lessons. The ability to personalize learning by reviewing lessons, watching educational videos, or using interactive resources is a major benefit of online learning platforms (Hattie, 2009).

Furthermore, the majority of participants found digital tools easy to use and access, which reflects the increasing ease with which students can engage with educational technology (Puentedura, 2014). The findings showed that 35.4% of the participants agreed that using digital tools helped them understand academic content, with 15.9% strongly agreeing. Similarly, 39% of respondents believed that digital tools

had a positive impact on their learning outcomes, which suggests that for many students, these tools are valuable for reinforcing learning and enabling independent practice.

While a significant number of students report benefiting from digital tools, a considerable portion of participants remained neutral or uncertain about their effectiveness. For instance, 32.9% of respondents indicated neutrality when asked if digital tools helped them understand academic content. This hesitation reflects a broader concern regarding the quality and depth of learning that digital tools can provide, as they may not always offer the same interactive or personalized engagement as in-class instruction.

Furthermore, 10 participants (12.2%) expressed complete dissatisfaction with the use of digital tools during teachers' strikes, and believed these tools could never replace in-class learning. These results align with the argument that while digital tools can support learning, they cannot fully replicate the dynamics of face-to-face education (Dumont et al., 2010). This sentiment is consistent with the broader research on the limitations of digital learning, which emphasizes the importance of human interaction, immediate feedback, and guided instruction-elements that are difficult to achieve through online platforms (Vygotsky, 1978).

The findings from the questionnaire underscore the importance of in-class learning in providing an environment that digital tools cannot replicate. Although many students used digital tools during the strike, the data show a clear sense of uncertainty regarding their overall effectiveness. For example, 32.2% of respondents remained neutral on whether digital tools were effective for learning, indicating that many students still prefer the structure and engagement that in-person classes offer. This neutrality suggests that students recognize the limitations of digital tools in achieving deep and comprehensive learning and are unable to confirm achieving their learning goals.

In-class learning provides opportunities for immediate feedback, where teachers can observe students' responses, clarify misunderstandings, and offer real-time corrections (Hattie, 2009). Teachers also facilitate peer interaction, which is critical for developing collaborative skills and engaging in meaningful discussions that extend learning beyond the individual (Johnson & Johnson, 2009). These interactive elements of classroom learning are difficult to replicate through digital tools, which often lack the same level of social presence and immediacy (Schunk, 2008). This point is clearly illustrated when students were asked to highlight benefits of DT use as only 13.3% of respondents confirmed collaboration with peers through online platforms.

No one can deny that teachers play a pivotal role in guiding students through the complexities of academic content and fostering an environment that supports critical thinking, creativity, and motivation. In the questionnaire, 10 participants strongly disagreed with the idea that digital tools could replace in-class learning, reflecting a solid belief that teacher's presence is essential for student learning to take place. While digital tools may offer opportunities for self-paced learning, they lack the capacity to engage students emotionally, address diverse learning needs, and provide guidance in the same way teachers can in a classroom setting (Dumont et al., 2010).

Teachers also offer scaffolding, where they provide support that is tailored to students' current levels of understanding, gradually reducing this support as students become more proficient (Vygotsky, 1978). Teachers are entitled to several roles inside the classroom, they are not only knowledge providers, but also monitors, facilitators and instruction providers. This personalized approach is difficult to replicate with digital resources. Moreover, the emotional and motivational support that teachers provide is a key component of the learning process. Teachers foster a learning community, where students feel encouraged to ask questions, take risks, and express their ideas openly. This social dimension of learning cannot be

fully replicated through digital tools, which may leave students feeling isolated or disengaged, especially when learning is not facilitated by a teacher (Puentedura, 2014).

Conclusion

Students' dissatisfaction with their learning experiences while utilizing digital tools and online resources during teacher's strikes is understandable since most of them lacked effective autonomous learning strategies. Most of them lacked goal-setting and self-evaluation skills. Besides, the use of digital tools for educational purposes among Moroccan high school students during teachers' strikes is novice since technology is rarely used in Moroccan context. Thus, the use of such tools in learning during the strikes was deemed to face numerous challenges and difficulties due to multiple factors. Main challenges were related to lacking autonomous learning strategies and the overwhelming amount of material available online. Moreover, the affective side also played an important role in the sense that most students reported the need for emotional support from their teachers as well as interaction with peers. This is mainly because most of students rely on in-person learning since early life stages with very little learning autonomy both in and out of the classroom.

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