International Journal of Language and Literary Studies
Volume 4, Issue 2, 2022
Homepage : http://ijlls.org/index.php/ijlls

Reading on Screen Vs Print: An Investigation into the Attitudes of Moroccan EFL University Students

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DOI: http://doi.org/ 10.36892/ijlls.v4i2.931

APA Citation: Taky-eddine, O. & Madaoui, R. (2022). Reading on Screen Vs Print: An Investigation into the Attitudes of Moroccan EFL University Students. *International Journal of Language and Literary Studies. 4*(2).265-282. http://doi.org/ 10.36892/ijlls.v4i2.931

Received:
06/05/2022

Accepted:
31/05/2022

Keywords:
Print reading; screen reading; Attitudes; EFL..

Abstract

This study was conducted with the objective to explore University students' attitudes toward onscreen reading and the factors affecting their attitudes. A descriptive survey was used in this study as a data collection tool. The questionnaire results of 212 students belonging to Ibn Zohr University, Faculty of art and humanities, have asserted that Moroccan EFL university students have positive attitudes toward onscreen reading. However, the participants also revealed several negative factors that make their onscreen reading experience challenging and troublesome. Overall, this study revealed five positive and negative factors affecting students' attitudes toward onscreen and print reading. These include practical factors, psychological factors, economic factors, cognitive factors, and health factors. The pedagogical implications discussed in this study are valuable and worth considering by students, teachers, decision-makers, and curriculum designers.

1. INTRODUCTION

Reading is not a luxury that EFL students can do without. Students who seldom read in the target language find more difficulties improving their writing proficiency and style (Krashen, 1993). In fact, the importance of reading goes far behind just improving students' writing proficiency and style. According to Cullinan (2000), autonomous readers tend to obtain higher scores on achievement tests in all subject areas, and they are likely to have more content knowledge than those who do not read. Even more important, the progress and refinement of any educational system require promoting a reading culture among its students (Straiger, 1973). Therefore, to instill, cultivate, and nurture a reading culture among students, it is crucial to gain insights into the factors affecting their attitudes toward their current reading habits and practices. First, the questions beg to be answered are: what type of reading is this generation experiencing nowadays? Is there any change in the medium students use to read?

Whether or not there is a change in the way students read is clear. The shift from print to screen reading has remarkably increased due to the ongoing proliferation of digital devices. In

fact, several researchers in the field of digital reading (e.g., Coiro, 2003; Baron, 2013; Picton, 2014) have declared that technological proliferation has brought about increasing dependence on electronic texts, especially among young readers. As a result, the growing use of technological devices has remarkably changed students' reading habits and practices (Vandenhoek, 2013). Moreover, the recent Coronavirus pandemic has affected education worldwide, leading universities to resort to distant teaching and students to engage in increasing use of screen-based platforms. Also, over the recent years, ICT has been deemed a priority in the process of empowering and refining education. These changes, among many others, have made today's students spend more time reading on computers, laptops, smartphones, and other technological devices than before. This rapid evolution from print to screens made some researchers (e.g., Kelly, 2006; Baron, 2013) speculate about the death of paper-based publications and believe that babies born these days will probably never read anything in print.

Notwithstanding, it is hard to assert that printed reading will one day be replaced by onscreen reading or that all future works will only be born digital. Yet still, we all notice how classical reading -in which readers flicker through printed pages- has been gradually replaced by clicking, scrolling, and navigating through electronic texts. Accordingly, due to this transformation in the way students read, the present study came with the objective to explore the Moroccan EFL students' attitudes toward reading onscreen and the factors affecting their attitudes toward this new reading medium. Based on these objectives, two research questions were addressed in the present study:

RQ1: What are the attitudes of Moroccan EFL students toward reading on-screen vis-à-vis print?

RQ2: What are the factors that might positively or negatively affect Moroccan EFL students' attitudes toward reading on screen?

2. RELEVANT RESEARCH STUDIES

Researchers and educators have a common consensus that young students dote on technology, but whether or not their love of technology is also reflected in their attitudes toward onscreen reading is still inconclusive. Therefore, the studies below have examined students' attitudes toward onscreen reading and some factors affecting them.

Abidin, Ping, and Raman (2012) examined students' attitudes and motivation toward the use of web-based reading resources. Their findings indicated that students had positive attitudes toward web-based reading resources and were more motivated when exposed to them. By the same token, Son (2003) examined university students' attitudes and perceptions toward computer-based hypertexts. Comparing it to paper-based reading, the findings of Son's study revealed that hypertexts provided assistance and added more value to their learning. Likewise, Ciampa (2012), who delved into students' attitudes toward reading electronic books, validated the positive motivational effects of computer-assisted reading instruction on students. Besides, the findings of Ciampa's study suggested the promise of online reading software programs in supporting early readers with reading, motivation, and/or behavioral difficulties.

As a rebuttal to the previously mentioned studies, other researchers asserted that students still considered printed texts the best medium for reading despite their enthusiasm for technological devices. Spencer (2006), for instance, surveyed online course-related reading habits and choices of 254 graduate and undergraduate business students. The researcher concluded that learners opted for print copies of text materials based on the participants' responses, anecdotal comments, and interview answers. Spencer concluded that students' preference for printed materials over screen-based ones was due to the factors of portability, dependability, flexibility, and physical holding of printed texts.

Similarly, Longhurst (2003) conducted a study on the preferences of technologically proficient undergraduates toward reading assignments on the web versus print. Although the participants in Longhurst's study were technologically proficient, the findings revealed that they expressed deep anxiety and reluctance toward their onscreen reading assignments. Consequently, the participants preferred to print out their reading materials instead of reading them onscreen.

Further evidence supports students' preference for printed reading materials over screen-based ones, as suggested by Liu (2006), who investigated students' perceptions, preferences, and use of printed resources versus electronic resources. The findings revealed that students use online library text resources such as e-journals or the World Wide Web to look for the information they need before printing them out. Also, the findings revealed that students' preference to print out documents instead of reading them onscreen was due to the distraction they seemed to experience while reading in the online environment. Likewise, Baron (2013) concluded in her study that university students prefer printed reading over reading onscreen. According to her findings, the primary factor behind students' choice is the high level of concentration they feel when they read in print. Conversely, students admitted that they are more liable to multitask when reading onscreen.

In the same line of thought, Rose (2011) conducted open-ended interviews to gain insights into university students' experiences regarding reading digitalized texts. Thematic analysis and interview transcripts of students revealed negative factors related to focus, health, and physical holding when reading onscreen. In the same vein, Jeong and Gweon (2021) compared students' attitudes across paper, computers, and tablets. The findings showed that students held positive attitudes toward reading in print more than on digital devices. Students reported higher levels of perceived understanding, confidence, and immersion in images and lower levels of perceived fatigue for print reading vis-à-vis screen reading.

In a nutshell, analysis of the studies above reveals ambivalent standpoints on students' attitudes toward onscreen reading. Some studies concluded that students have more positive attitudes toward onscreen reading, while others stressed several factors that negatively impacted students' perspectives.

3. METHOD

To examine Moroccan EFL first-year University students' attitudes toward onscreen reading and the factors affecting their attitudes, questionnaires were distributed to 212 students at the Faculty of Arts and Human Sciences in Agadir. The choice of the questionnaire

instrument in the present study was due to three factors cited by Creswell (2002). First, the questionnaire is one of the most widely used instruments, for it allows reporting a large sample within a short amount of time and in the most economical way. Second, the data provided by the questionnaire are valid and reliable since the included items are anonymous, specific, and straightforward. Third, data provided by the questionnaire lend itself to further analysis and discussion.

3.1.Participants

The sample included 212 Moroccan EFL first-year university students from the Arts and Human Sciences faculty in Agadir. All participants willingly agreed to fill out the questionnaire; no one of the participants were forced to participate in this study. The participants freely expressed their attitudes; no participant in this study was coerced in any manner. The anonymity of the participants ensures the privacy of each person. The demographic information revealed the distribution of students in terms of gender and age. 54% of the participants were females, and 66% were under the age of 20. All participants revealed that they are familiar with reading onscreen.

Figure 01. below displays the use of computers by the participant in the present study. Personal data revealed that almost half of the participants (49%) spend four hours or more on their computers. These results show that students spend a considerable amount of time on their computers and smartphones. Besides, an open-ended question was asked to explore the participants' daily activities on the computer and phone screens. The open-ended question revealed that participants' activities revolve around sending Emails, chatting, listening to music, watching movies, and surfing through social networks. In addition, the participants also mentioned activities related to their academic life, such as reading articles, short stories, and newspapers, as well as searching for information and writing.

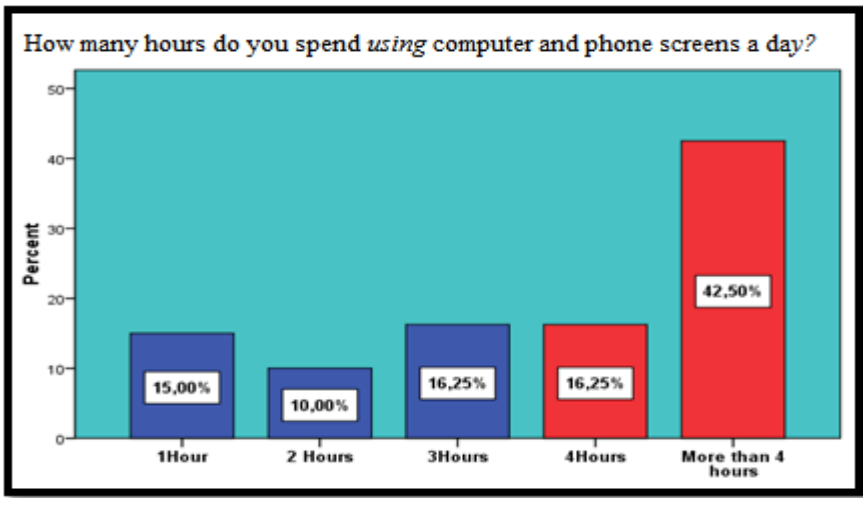


Fig 1: *The number of hours students spend using computer and phone screens a day.*

1.1 The survey questionnaire:

According to Ajzen and Fishbein (1980), people's attitude toward an object consists of three main components: affective (what individuals feel), cognitive (what individuals believe),

and behavioral (what individuals do). Generally, attitudes can be favorable/positive or unfavorable/negative (Eagly & Chaiken, 1993). Therefore, to probe students' attitudes toward onscreen reading, the questionnaire administered in the present study revolved around these three components: First, participants' feelings toward reading onscreen (e.g., how much you like onscreen reading?). Second, participants' beliefs about onscreen reading. (e.g., In which reading medium do you believe you read faster? / How likely are you to multitask when reading in print and onscreen?). Third, participants' reading behaviors onscreen (e.g., How often do you read onscreen versus in print? / If academic work is available online, would you read it on screen or print it out?).

The questionnaire employed in the present study constituted of the elements depicted in the chart below:

Table 1. Aspects of the Survey Questionnaire Instrument

The heading	The main heading, the "Students' Questionnaire," appears in bold in the middle of the front page.
The aim of the study	The questionnaire started by stating the aim of the study to clarify for the participants what the questionnaire is about and what it demands from them.
Demographic and personal data	This part of the questionnaire aims to reveal the participants' study level, age, sex, use of computer and phone screens, and daily screen-based activities. Nevertheless, confidentiality was maintained, and participants' identities remained anonymous.
Close-ended questions	The questionnaire employed in this study consisted of 9 closed questions. Thus, participants were presented with questions that they had to answer by choosing between range of responses. These highly structured, closed questions enabled the researcher to determine the participants' affective, cognitive and behavioral tendencies toward onscreen reading.
Open-ended questions	Three open-ended questions utilized in this questionnaire allow the participants to defend their choices and freely voice their opinions.
Blank space for further information	Blank space was provided at the end of the questionnaire in case the respondents had some further remarks, comments, or unsuspected information about the topic.

3.2.Procedure

The data collection took place at the faculty of Arts and Humanities in Agadir, Morocco. This questionnaire was distributed in the classrooms, library, and nearby the English department at the same faculty. To this end, the participants were given sufficient time to complete the questionnaire and ask for clarification whenever necessary. To ensure they understood all the questions, the researcher encouraged the participants to ask for clarification if any ambiguity was encountered.

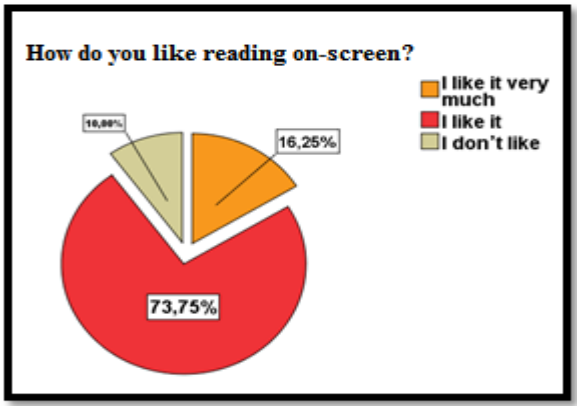
3.3.Statistical analysis

Descriptive statistical procedures were used to examine University students' attitudes toward onscreen reading. Therefore, the questionnaire data were analyzed using the Statistical Package for the Social Sciences "SPSS." The aim was to obtain frequencies and percentages to numerically investigate the participants' answers. Data were presented in charts, percentages, and diagrams to illustrate the study results. As well, a brief description was attached to every statistical result figure.

5. RESULTS

5.1.The Findings of the Questionnaire Data Analysis:

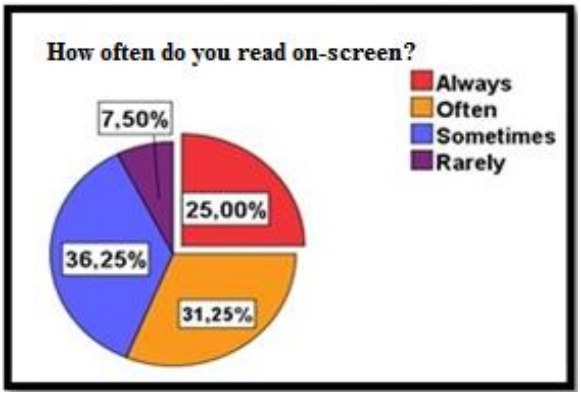
Question 1- How much do you like reading onscreen?



This figure indicates that 90% of participants do like or very much like reading onscreen. Only 10% of participants dislike reading onscreen. The students' positive feeling toward onscreen reading is further investigated in terms of students' reading practices in the next question.

Fig 1 *Students' feeling toward reading* onscreen.

Question 2: How often do you read onscreen and in print?



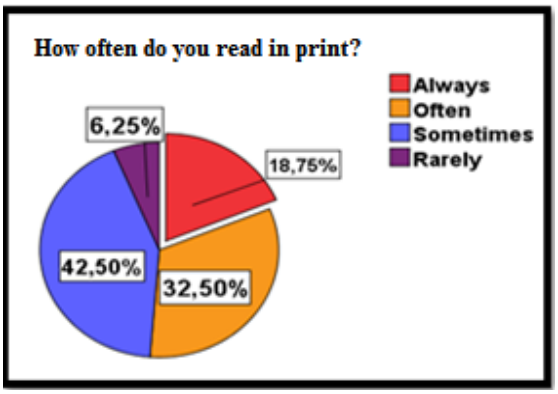


Fig 2 *Students' frequency of reading onscreen and in print.*

The figure above compares the participants' reading frequency onscreen and in print. Despite the slight statistical differences between the two figures, the percentages display that the participants' reading frequency is approximately the same in both reading mediums. This reveals students' increasing dependence on screens as mediums of reading.

Question 3: What material do you prefer to read onscreen and in print?

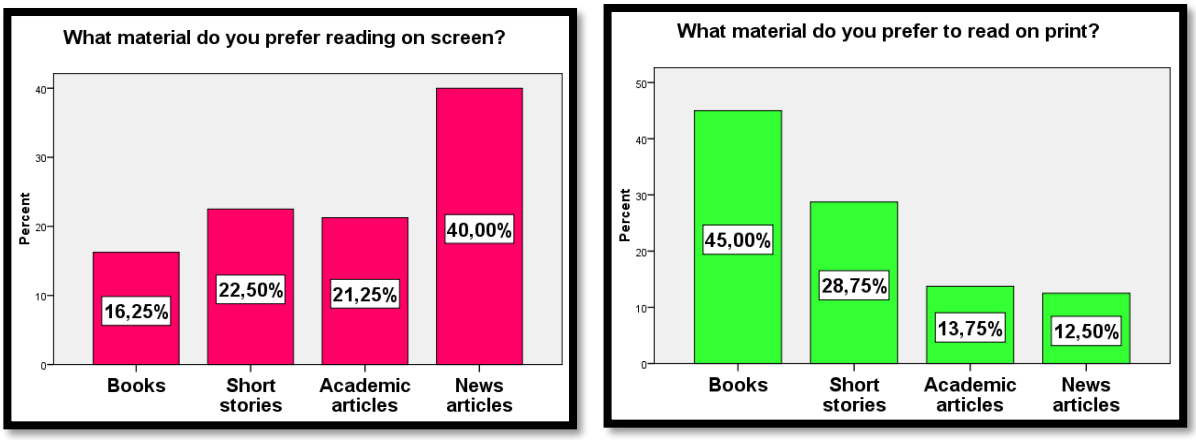
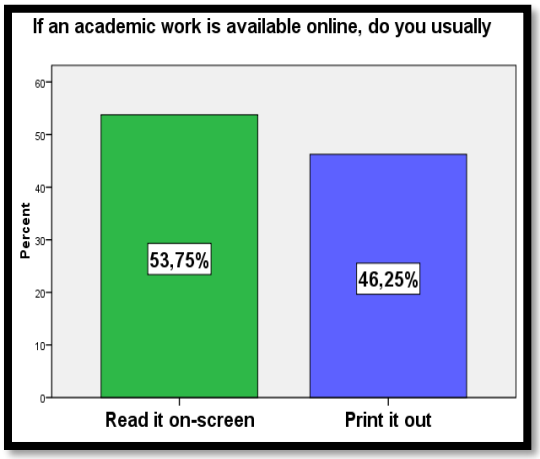


Fig 3 *Reading preference of reading material* onscreen *and in print.*

Most of the participants (40%) report newspapers to be the most common reading material they prefer to read onscreen, followed by short stories (23%) and academic articles (21%). Books rank the last material participants choose to read onscreen. On the other end of the spectrum, the primary reading material that students read is print books (45%), followed by short stories (29%) and academic articles (14%). News articles rank the least likely material for students to read in print.

Question 4: If academic work is available online, do you usually read it onscreen or print it out? Justify your choice.

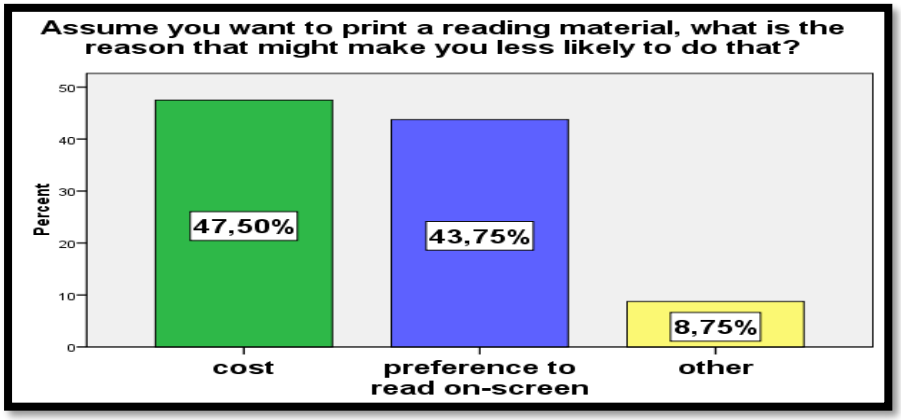


54% of the participants state that they would read the academic material right away onscreen, while 46% declare that they would print it out first. The main reasons behind the participants' choices are revealed below by an open-ended question.

Fig 4 *Reading preference onscreen and in print.*

- Participants' justifications for choosing to read an academic work onscreen:
  - Onscreen reading provides a feeling of enjoyment and motivation.
  - Onscreen reading enables to save countless reading materials.
  - Onscreen reading enables one to easily and rapidly access academic reading material.
  - Onscreen reading enables free access to dictionaries and academic reading resources.
  - Printed reading resources and references can be very costly.
- Participants' justifications for choosing to read an academic work in print:
  - Onscreen reading can cause neck pain, headache, and eyestrain.
  - The physical holding of reading materials is absent onscreen.
  - The likelihood of multitasking is greater onscreen.
  - The level of focus is higher when reading in print.
  - The ability to highlight, underline, and jot down notes is effortless in print.

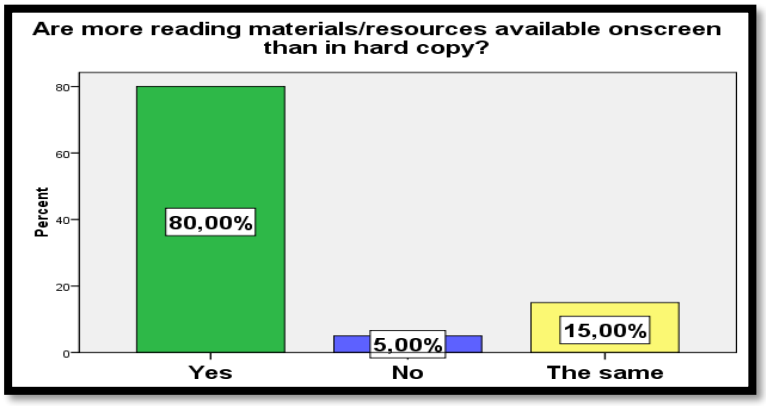
Question 5: Assume you want to print some reading materials. What is the reason that might make you less likely to do that? Cost? Alternatively, preference to read onscreen? Alternatively, other reasons?



47% of the participants asserted that the reason that might make them less likely to print their material is the financial cost of printing. On the other hand, 44% of students believe that they would not print the material they would like to read because they prefer to read it onscreen.

Fig 5 *The reasons that make students less likely to print reading material.*

Question 6: Are more reading materials and resources available onscreen than in print?

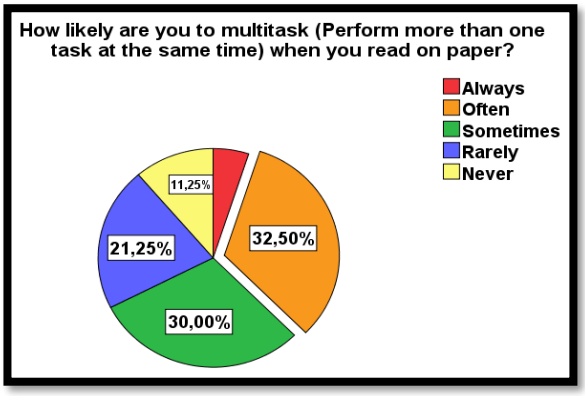


The majority of the participants (80%) assert that reading materials and resources are more available onscreen than in print. Only the very minority (5%) of participants believe otherwise. Between the two extremes, 15% of participants believe that the availability of onscreen reading material and resources is equivalent to that in print.

Fig 6 *Availability of reading materials/resources onscreen versus in print.*

Question 7: How likely are you to multitask when reading in print and onscreen?

Multitasking in print ***Multitasking onscreen***



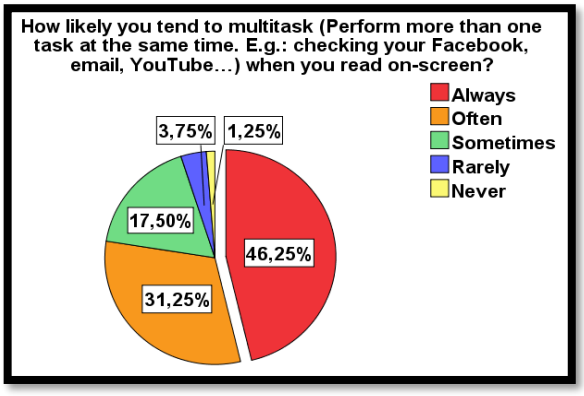
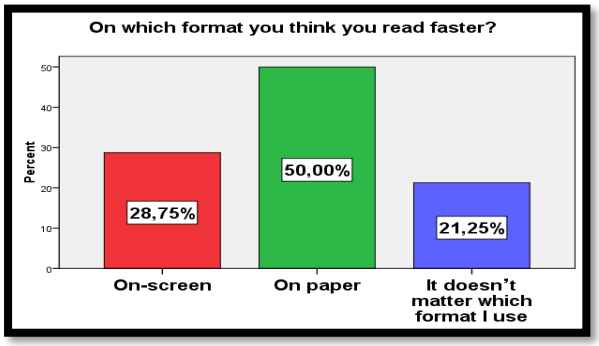


Fig 7 *Participants' multitasking while reading in print and onscreen.*

Only 5% of the participants affirm that they constantly multitask when reading in print. Contrariwise, 46% of the participants admit that they constantly multitask when reading onscreen. The percentages also show that only 5% of the participants never and rarely multitask when reading onscreen. Conversely, 33% of the participants rarely or never multitask when reading in print. These percentages reveal that multitasking is notably higher while reading onscreen than in print.

Question 08: In which reading medium do you believe you read faster?



About half of the participants (50%) believe that their reading speed is higher in print than onscreen. Only 29% of the participants believe that they read faster on the screen, whereas 21% believe that the medium of reading does not affect their reading speed.

Fig 08 *Students' reading speed* onscreen *and in print.*

Question 09: How many hours you can support reading in print and onscreen.

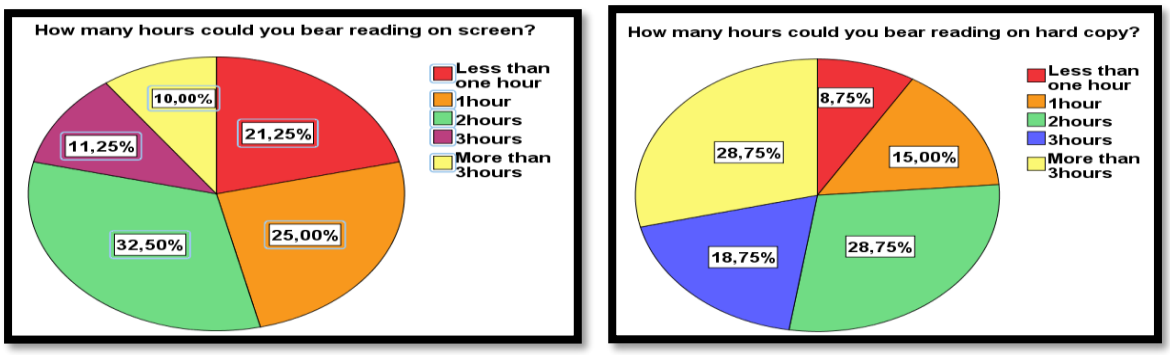


Fig 09 *The number of reading hours students can support onscreen and in print.*

The statistics reveal that only 21% of the participants can support reading three or more hours onscreen, whereas 48% can support reading more than three hours in print. In addition, the results show that students can read for longer hours in print than on screen.

6. DISCUSSION

This study asserted that students do like to read onscreen and that their attitudes toward it are very positive. The present study's findings validate the research conducted by Ciampa (2012), who concluded that online reading positively influences students' attitudes toward reading. Likewise, the results of this study are also compatible with Abidin, Ping, and Raman (2012), who concluded that students have positive attitudes and were motivated when exposed to web-based reading resources. In the same line, Rosalia (2002) also stressed students' positive attitudes toward onscreen reading when she stated that technology attracts many young people to read.

The students' positive attitudes toward onscreen reading in this study are revealed in the number of factors that students believe to positively affect their reading onscreen. The factors mentioned by participants include (1) the feeling of enjoyment and motivation, (2) the ability to save countless reading material, (3) the ability to easily and rapidly access academic reading material, and (4) the free access to dictionaries and academic reading resources. In the same vein, Baron (2013) concluded that students find it very convenient to read on Tablets, e-readers, mobile phones, and other technological devices. Readers can now read whenever and wherever they want without being bound to carry heavy books. Similar to the findings of this study, Baron summarized the benefits of onscreen reading as being practical, accessible, portable, and environmentally friendly.

Additionally, students' positive attitudes toward onscreen reading are indicated in their reading preferences. In the present study, the growing tendency to read more onscreen is crystal clear when comparing the number of English articles, news, poems, and short stories participants read onscreen with those read in print. The findings revealed that students read English articles, news, academic articles, and short stories onscreen more than they do in print. This shows that Moroccan university students are increasingly replacing classical reading with digital one, especially when reading short texts. The present study's findings are consistent with Coiro (2003) who asserted that young readers are progressively substituting printed reading with the onscreen one. In this regard, Rose (2011) described the shift from print to screen as evolutionary and inevitable.

Notwithstanding, although Moroccan EFL students revealed positive attitudes toward onscreen reading, they have also stressed several factors that negatively affect their attitudes. These factors include loss of focus and increased likelihood of multitasking, negative health effects such as neck pain, headache, and eyestrain, and other drawbacks such as slow reading speed.

The problem of multitasking onscreen is a factor that is frequently detected in the findings of this study. Approximately half of the participants in the present study stated that they constantly multitask when they read onscreen, while very few participants reported that they multitask in print. The fact that screen devices are likely to be connected with the Internet makes readers predisposed to easily lose interest, especially since they are aware that a new enticing stimulus is at hand. Further evidence to support this claim was stated by Liu (2006), who found out that most students print out the texts they intend to read due to their vulnerability to online distractions and interruptions. Likewise, Baron (2013) concluded that college students prefer reading in print due to the multitasking problem, which is more likely to occur when reading onscreen.

Besides, although Moroccan EFL students expressed positive attitudes toward screen reading, they have also stressed some health factors that make their onscreen reading uncomfortable. Headaches, neck pain, and eye strain are common problems reported by students in this study's findings. Such factors were also raised by Baron (2013), who found that readers often complain about symptoms such as headaches, sensitivity to light, and Eye discomfort while reading onscreen. Such health factors might be why participants in the present study state that they can read for longer hours in print than on screen. That might also be why participants indicated that they prefer to read lengthy reading materials such as books in print.

Moreover, when asked about their reading speed in print and onscreen, half of the participants in the present study believed that their reading speed is higher in print than on screen. Although this result was based on what students believe, their assumption that their reading is slower onscreen seems to be consistent with some empirical studies but also in contrast with others. For example, researchers such as Gould and Grischokowsky (1984), Belmore (1985) and Georgiev (2012) found that reading from screens is significantly slower than reading from paper. Conversely, Switchenko (1984), Askwall (1985), Cushman (1986), Dündar and Akçayır (2017), and Elliott, Ljubijanac, and Wieczorek (2019) concluded that eye-tracking patterns in reading onscreen and in print are the same, indicating that the reading speed is less likely to be affected by the screen reading medium.

Last but not least, students' frequent use of screens as reading mediums may not only be due to their love of the screen itself. To illustrate, when students in the present study were asked about what can make them reluctant to print their reading material, around half of the participants declared that they could not print everything they wanted to read because of financial reasons. That is to say, the fact that students read onscreen might not only stem from their love of the screen itself but rather from the fact that they cannot afford to print out all the reading materials they find riveting onscreen. The printings cost was also indicated in Keller's (2012) study as a contributing economic factor to students' screen preference.

In sum, inconsistencies in the findings above and the amalgam of factors that positively and negatively affect students' attitudes toward this new form of reading have led to an intricate discussion and ambivalent standpoints. As a result, Researchers in this field can be divided into critics and advocates. Critics of the new digital reading platforms view the phenomenon of onscreen reading with skepticism and resistance, whereas its advocates promote using technological devices as new reading platforms.

7. CONCLUSIONS AND RECOMMENDATIONS

Students' feelings, beliefs, and behavioral tendencies in this study have revealed that the shift toward onscreen reading is remarkably increasing and that students' attitudes toward it are positive. Nevertheless, this does not insinuate that students dislike reading printed texts or no longer use this conventional reading medium. On the contrary, when compared to onscreen reading, students have indicated that printed texts increase their focus, minimize their multitasking, and allow them to take notes and highlight important points. Additionally, as summarized in the table below, this study has revealed five main positive and negative factors that affect students' attitudes toward onscreen reading. These factors are practical factors, psychological factors, economic factors, cognitive factors, and health factors.

Factors that affect students' attitudes toward onscreen reading					
Factors that positively affect students' attitudes toward onscreen reading			Factors that negatively affect students' attitudes toward onscreen reading		
Practical factors	Psychological factors	Economic factors	Practical factors	Cognitive factors	Health factors
- Easy and rapid access to diverse reading materials. - Ability to save countless reading materials.	-The feeling of enjoyment and motivation students feel onscreen, for it represents to them an innovative way to read and learn.	- Ability to access free dictionaries, references, and other academic reading resources. - Printing expenses are costly to some students.	- Lack the physical holding of onscreen reading materials. - Difficulties in highlighting, underlining, and jotting down notes while reading onscreen.	- Loss of focus due to multitasking while reading onscreen. - Students' assumption that their reading speed can be slower onscreen.	- Prolonged onscreen reading is associated with some health problems such as neck pain, headache, and eyestrain.

The findings of this study should give teachers a pause and raise their awareness of the fact that technology is sweeping through every aspect of youth's life, including their reading habits and practices. Hence, instead of resisting or standing motionless against students' shift from printed reading to onscreen reading, stakeholders in education should take this inevitable movement more seriously to evaluate its positive and negative consequences. In fact, keeping

pace with changes and challenges occurring to our students is not a luxury that we - teachers and researchers - can do without; it is instead our duty to remain up-to-date and adapt to such changes.

In sum, the recommendations arising from this study are categorized into the following:

1. Researchers should view the topic of print versus onscreen reading from a complementary perspective rather than an incongruous one, for both are essential in today's students' academic success.
2. This study adds to the expanding body of evidence that computer-assisted reading has positive, motivating effects on students. Therefore, teaching should be modernized by increasing funds and technological support to promote the use of digital devices in our schools and universities. For instance, students should have some level of access to computers in their libraries to encourage research and promote reading.
3. Teaching reading in universities should be modernized by considering innovative teaching methods and allocating more onscreen reading assignments to students.
4. IT training and assistance should be provided to teachers to facilitate implementing the use of digital devices as a part of their teaching methodology.
5. Curriculum developers should include some computer-assisted reading (CAR) activities in EFL textbooks.
6. Teachers should promote a learner-centered approach and instill a independent reading and learning culture by providing students with motivating websites and online references that suit their proficiency level.
7. Students should be made aware of the critical role of electronic texts in enriching their reading and learning.
8. Teachers should raise their students' awareness of the drawbacks and challenges they may face while reading onscreen and how to deal with them. Onscreen reading drawbacks include cognitive drawbacks such as multitasking, slow reading, and unfocused reading, and heath drawbacks such as neck pain, headache, and eyestrain.
9. Students should be provided with effective and efficient reading strategies to help them navigate and comprehend electronic texts successfully.
10. Designers of electronic texts should think of ways to make their texts more structured, flexible, and reader-friendly.

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Funding Acknowledgement: This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.