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Algerian secondary school students' preferences for the use of YouTube in their informal learning

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Abstract. Various technological tools are adopted in the learning process to help students access available knowledge on the net. Due to the COVID-19 pandemic, many Algerian teachers relied more on social network sites, such as YouTube and other applications, to provide their students with lessons. The current study sought to determine the types of videos that Algerian secondary school learners prefer. The study sample included 413 secondary-level students (66% females and 34% males). A short four-question questionnaire was used to collect data. The results indicated that students spent more than 4 hours online daily. They preferred educational content in short videos of 10 minutes at maximum, as well as videos containing content related to materials and exercises pertinent to baccalaureate exercises and/or a presentation about methods of solving exercises without the presence of a teacher's picture. The study suggested recommendations on the importance of using the available technological tools and training teachers in ICT in education.

Keywords: learning, e-learning, informal learning, social network site, YouTube

1. Introduction

Wi-Fi, 4G, Smartphones, and Web 2.0 tools have become indispensable in our daily lives [46]. The statistics show that over 5 billion people use the Internet to access the most used sites, such as Facebook and YouTube [20]. Users access these sites to communicate, interact, and find organizations and communities, pages, and specific content of personal or common interest [3, 33]. Internet users can produce information by creating, editing, and sharing knowledge online (e.g., [3]).

The fast advancements of the information society, as well as the increased production of various types of content, have facilitated self-directed learning and the construction of learning spaces outside academic settings [33, 35, 44]. Examples of such spaces used in education are flipped classrooms and flipped learning, or informal learning, which can be classified into two related categories of teaching and learning. Such teaching and learning incorporate the students' reliance on themselves to use information outside class. The class time is then utilized for activities, such as discussions and solving problems. One of the means of accessing information on the Internet is video, which has recently become one of the most prominent tools for

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developing and disseminating educational content via the Internet, either in educational spaces or on various social networking sites.

During the COVID-19 pandemic, e-learning has become one resort to continue learning while respecting the health protocol. "e-learning is a tool to make the learning process more flexible, innovative and learner-centered" [9]. As a part of e-learning, educational videos and social media platforms, particularly YouTube, provide multiple options for students to access information [6]. Alternative distribution techniques like online learning can provide excellent options to reach diverse student levels. After the COVID-19 pandemic, many teachers became more experienced in using the Internet and its applications, like YouTube, in their teaching to make the course content more accessible to students. Indeed, several schools and organizations have utilized live lecture captures in that endeavour [40].

YouTube, behind Facebook, was the second most popular platform in the world in 2021 [22]. With a content portfolio that includes television clips, video tutorials or learning, video classes, and educational videos, this social networking platform has allowed viewers to become content viewers and content generators. YouTube has become a competitor to traditional media, emphasizing the importance of audience interaction with the content they receive. Furthermore, the diversity of its offerings has enabled practically everybody to find something of interest. According to Statista [45], internet users spent an average of 1857 seconds (about 31 minutes) per user per visit on YouTube in March and April 2020. From October 2020 to March 2021, the average time spent on YouTube per user visit remained stable. As for education, despite the dispute about the length (e.g., [32]), students spend up to 25 minutes [25] on YouTube per session. However, this depends on other factors, such as the novelty of the material, revisiting a missed part, applying tutorial steps, rerunning a segment, and going back to a non-visual explanation (e.g., [23]).

YouTube has emerged as a powerful platform for learning, providing individuals with access to a vast array of educational content. YouTube was initially used for entertainment, but consumers quickly realized it was helpful for educational purposes. Educational and instructional videos are now among the most popular videos on YouTube [37]. First, Google launched YouTube EDU on March 26, 2009, to support educational use. It presented itself as an educational centre for material presented to professionals, students, and ordinary people through lectures and courses (e.g., [12]). Its collection incorporates content from over 100 universities and colleges, comprising lectures by professors and world-renowned thought leaders. Next came YouTube for schools and YouTube for teachers. It is dedicated to educational content. For example, Pattier [36] purports that YouTube can be used as an educational resource. Video usage can be considered as a tool to reduce the amount of time spent in class on information transmission and increase the amount of time available in class for engaging in more meaningful learning activities, such as answering questions and discussing difficult subject material (e.g., [8]). Content is preferred for different reasons. According to Guo, Kim and Rubin [14], students like viewing tutorial videos. Students' needs and activity patterns determine the type of YouTube content to be watched (e.g., [23]).

There are personal and academic reasons for propagating the importance of using Videos in instruction. Ezell [11], a Marketing Content Strategist at TechSmith, has shown that 83% of respondents prefer watching a video to reading a written text. Hassinger-Das et al. [16] found that schoolchildren were more inclined to watch YouTube. Ascertaining participation at

least in online learning, 12th-grade students of social science have increased participation and activity because of their use of YouTube [27]. Regarding teaching languages, YouTube helped students' performance and understanding of the English language [1]. Several studies have explored using YouTube as a tool for self-directed learning, highlighting its potential to enhance knowledge acquisition, skill development, and personal growth. It transpires from these reasons that YouTube content is beneficial when it raises students' engagement, learning quality, and needs [14] as well as skill development and personal growth.

There is some inconsistency in the research regarding the teachers' presence in YouTube videos. Henderson and Schroeder [18] reviewed twelve studies pertinent to the preference for the instructor's presence. They reported that the studies they reviewed did not demonstrate conclusive evidence of whether the instructor should be present in the video. Research by Heidig and Clarebout [17] showed that the instructor's presence in the video may affect students' motivation and learning. Other factors may be introduced, such as the cognitive explanation (e.g., [28]). That is because learning is affected by processing what we hear (the instructor's words) and see (the instructor and what s/he presents as information and illustrations). Such processing, related to cognitive capacity in online learning, such as videos, burdens the learner [18]. This capacity could be essential, extraneous, or generative [28]. The essential relates to the processing of the task. The extraneous relates to external factors that do aid learning. The last is generative, vital for incorporating the information in long-term memory [28]. Will those processing factors determine whether the instructor's presence is essential as it helps or hinders learning [5]? The instructor's presence may help in learning because important information is signalled/pointed out by the instructor [2, 41, 42].

Moreover, Domagk [10] showed that the instructor's presence provides social cues that impact students' learning. Examples are gestures, facial expressions, eye gaze, and human-like movements [7, 26, 30, 31]. However, the instructor's presence may hurt the student's learning from videos; as mentioned earlier, processing is made by words and pictures. This may have a burden on the learners' processing of information. They may be split between the information written or spoken and the picture of the teacher or his speaking and gestures [4, 21].

There seems to be a clear picture of the state of this space "YouTube" for users worldwide. As for Algeria, Kemp's report [22] in Datareportal statistics of early 2022 shows that 27.28 million (60.6%) of Algerians use the Internet. 26.60 million use social media (Facebook, 22.45 million; Facebook Messenger, 14.25 million; Instagram, 8.60 million; LinkedIn, 2.80 million; Snapchat, 6.25 million; and Twitter, 891.5 thousand). The number of mobile users reached 46.57 million. The millennial generation of students has grown up with technological tools, devices, and digital software. Their constant watch of videos on different social media platforms allowed them to access available content. Some studies in Algeria have shed light on how YouTube can be leveraged as a valuable resource for learning at the university level (e.g., [43]). Fewer studies have been conducted about using YouTube in informal learning in Algerian secondary or middle schools (e.g., [19]). As learning via the internet "E-learning" allows for holding students responsible for their learning, it would be plausible to ask "What do learners want in terms of learning materials?". Simply put, educators need to know what educational videos students prefer to watch. To answer this question, the present study focuses on answering the following questions:

1. How much time do students spend on the Internet with their smartphones?
2. What is the average duration of videos they watch?
3. What are the types of video content they watch?
4. Do students prefer the presence of the teacher in the videos?

2. Methods

Our primary objective was to gauge students' opinions regarding their preferences for certain types of videos in informal education settings and find out about the video characteristics students prefer to watch. We were searching for answers to the following questions

- *What is the most common website you visit?*
- *What is the average duration of videos you watch?*
- *What are the types of video content you watch?*
- *How do you prefer the teacher's presence in the videos?*

Our study focused on a single district, Setif, located in the eastern region of Algeria, and involved 413 students. Due to the exploratory nature of our study, a descriptive method was used, and samples were randomly selected. To collect data, we used a questionnaire administered to students in their classrooms to probe their preferences for educational videos. Statistical Package for the Social Sciences (SPSS) was used to collect and analyze responses. Our hypothesis posits that students exhibit preferences for specific characteristics in educational videos. Statistical measures such as means, standard deviations, and percentages were used to investigate this hypothesis.

Table 1
Description statistics.

Item	Option	Frequency	Percentage
Gender	Male	264	36%
	Female	149	64%
Division	Literature & Languages	103	25%
	Math	62	15%
	Science	248	60%
Do you have a smartphone	Yes	413	100%
	No	0	0%
Do you have a tablet	Yes	215	52%
	No	198	48%

As shown in table 1, the sample consisted of 413 third-year secondary school students (grade 12th) at the Wilaya (province) of Setif, in Algeria, during the academic year 2020/2021. The sample average age was 18 years. The participants were (64%) females and (36%) males. The percentages of the participants were as follows: 60% in Experimental Science, 15% in Math, and the remaining 25% in Literature & Languages. Students study in different subject concentrations:

experimental science, math, and other humanities and social sciences, such as literature and languages. The Experimental Science students' concentration study focuses more on general science, biology, and chemistry. They also study other subjects like mathematics, physics, and languages. Mathematic students study more math and physics but with less emphasis on biology, literature, and languages. Literature & Language students study more philosophy and language-related subjects but less math and science. All students study philosophy, humanities (mainly geography and history), and religion. All (100%) of those who participated in the study possessed a smartphone connected to the Internet. 52 % of them had a tablet. 90% had an Internet connection at home.

3. Results

First question: How much time do students spend on the Internet with their smartphones

Table 2
Daily time students spent on the Internet.

Item	Hours per day	Frequency	Percentage
How much time spent with your smartphone on Internet?	1	34	8.2%
	2	45	10.9%
	3	72	17.4%
	4	94	22.7%
	5	62	15 %
	6	33	8 %
	7	24	5.8%
	8	49	11.8%

As shown in table 2, students spent approximately 4 hours and 30 minutes daily on the Internet, and the most visited website was YouTube.

Second question: What is the average duration of videos they watch?

Figure 1 demonstrates that 87% of students watch 10-minute videos. It also transpires that the longer the video duration is, the fewer students watch them. Only 7%, 5 %, and 2% of students watch 15, 20- and above 20 minutes long videos, respectively.

Third question: What are the types of video content they watch?

This part determines the content the students want to see in YouTube videos. The content has been divided into four levels:

- Lesson.
- Baccalaureate (Bac) exercise.

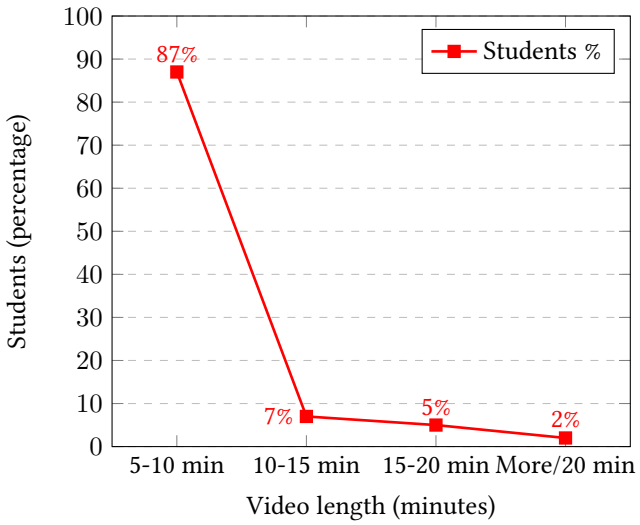

Figure 1: Video length (per minute).

- Method for problem-solving exercise.
- Lessons plus an explanatory exercise.

Figure 2 shows two samples, the Math & Science (M & S) concentration (black colour) and

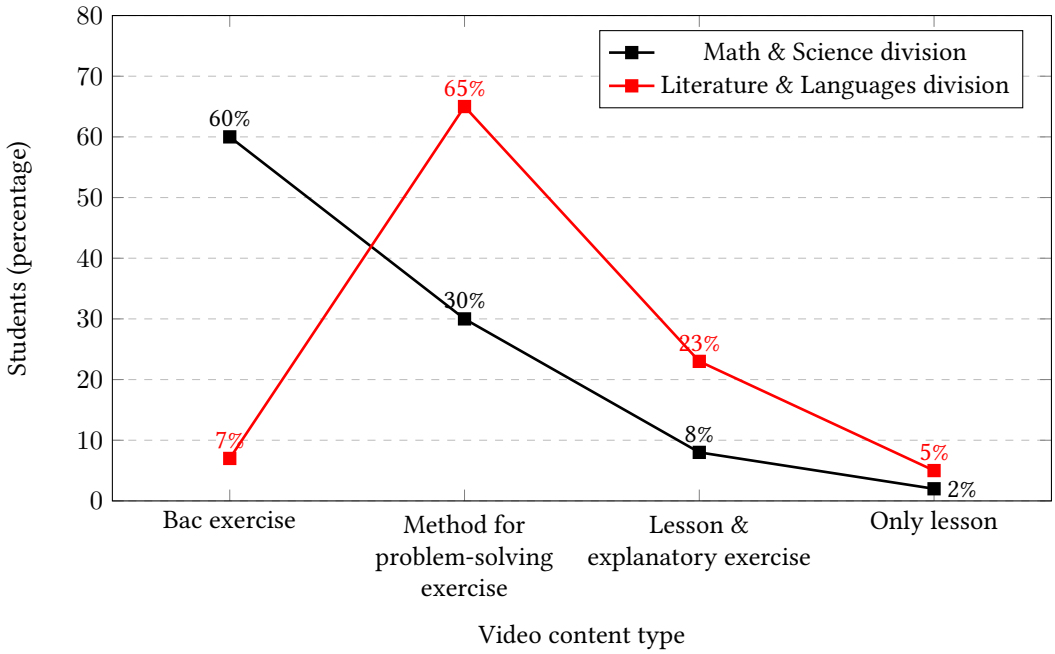

Figure 2: Video content type.

the Literature & Languages (L & L) concentration (red colour). This arrangement was chosen because the teaching methods differ in the two divisions.

Firstly, while 60% of the "M & S" concentration students watch videos that show Baccalaureate exercises, 30% watch videos that talk about a method for problem-solving exercises, 8% watch videos about lessons coupled with explanatory exercises, and 2% of the students watch videos present a lesson only. Secondly, 65 % of "L & L" concentration students watch videos that show methods for problem-solving exercises, 23 % of them watch videos that present lessons and explanatory exercises, and 7 % watch videos about Baccalaureate exercises. Finally, 5 % of students watch videos that show lessons only.

***Fourth question*: Do students prefer the presence of the teacher in the videos?**

Figure 3 shows the same trend in both samples' preferences for the presence of a teacher in the video. Both "M & S" and "L & L" have a low preference for Live videos (11% and 8%) as well as for videos recorded in the classroom (7% and 5%), respectively. However, this preference changes slightly, with 32% of "L & L" and 30% of "M & S" students preferring videos presented by teachers. Both student groups (55 % of "L & L" and 52% of "M & S") would rather watch videos that are voice only (no presence of the teacher).

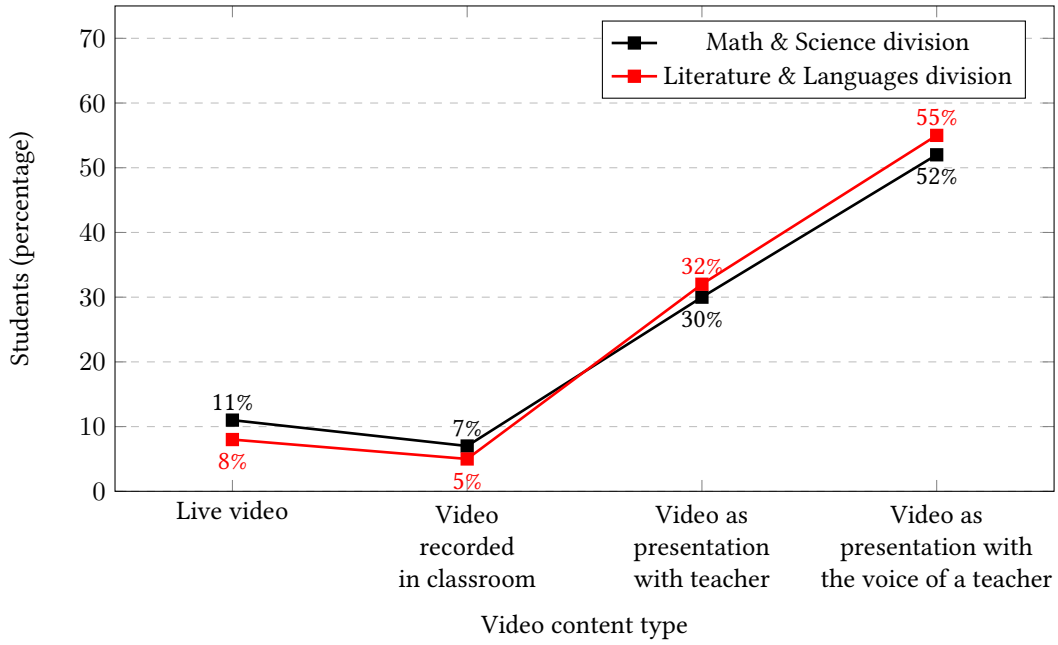

Figure 3: Video content type (description).

4. Discussion

4.1. Daily time students spent on the Internet

The results indicated that the study's students spent about 4 hours on the Internet. This seems to go in line with published research (e.g., [16]). As research indicates (e.g., [1]), online learning using different means, such as YouTube, helps students perform and understand better. This research showed that many school students have smartphones and more access to the Internet and social network sites. This aligns with the findings of the OECD [34]. In OECD countries, the number of home Internet connections reached 481604865 subscriptions. The mobile connection reached the number of 1763886061 in 2021. There was a 17% growth in mobile subscriptions in 2022.

On the other hand, the increase in Internet usage has been considerably more noticeable. Second, before the pandemic, the average time spent on the Internet was 4 hours and 30 minutes per day, or 31 hours and 30 minutes per week. PISA asked students how much time they spend online at school and home – the average amount of time spent on the Internet by 15-year-olds in OECD countries increased from 21 to 29 hours per week between 2012 and 2015. This study's findings confirm the universality of youth's heavy access and use of the Internet. This leads to the idea that teachers can direct their students to watch more education-related videos. This also gives more opportunities for students to rely on themselves in their learning.

Consequently, teachers must get accustomed to a more student-centered teaching style. This is because e-learning favours this type of teaching and learning. Many studies confirmed that when used as a complementary tool, online learning benefits students (e.g., [47]) if they effectively integrate it into the teaching and learning process. Teachers must be able to build relationships with their students and technology [48]. For instance, learning via video can help with this in matters of (duration, type of knowledge material, and the presence of a teacher in the video) [39].

4.2. What is the average duration of videos they watch?

Results showed that 87% of students reported they watched 10-minute videos. This seems to go with research carried out on university students. Guo, Kim and Rubin [14] study suggested that the shorter the videos are, the more they are preferred to be watched. Despite the dispute on a YouTube video's ideal and effective length, research seems to go with an average of 10 or fewer minutes. For example, Lagerstrom, Johanes and Ponsukcharoen [25] recommended that video length for teaching could be 12–20 minutes. However, this depends on the relevance of the videos. Indeed, research reported that students watch videos for up to 25 minutes but may watch them in many viewing sessions (e.g., [32]). This also depends on students' activity patterns [23], such as tutorials. Guo, Kim and Rubin [14] support the idea that YouTube content is beneficial when it raises students' engagement, learning quality, and needs.

4.3. What are the types of video content they watch?

Students in the sample watched YouTube videos that are related to their lessons (67%), exercises related to the secondary certificate (Baccalaureate exercises) (85%), the method for problem-

solving exercises (23%), and. lessons supported by explanatory exercises (5%) for "M & S" students. These changes for "L & L" students are as follows for the same types of video content (7%, 30%, 8%, and 2%). While "M & S" students prefer the Baccalaureate exercises method, their "L & L" counterparts opt for the problem-solving exercise contents. As the baccalaureate exam plays a significant role in students' education, teachers can direct their students to the types of videos compatible with students' preferences for video content that go along the Baccalaureate assessment format. Guo, Kim and Rubin [14] reported that students enjoy watching tutorial videos. Students' activity patterns and needs determine the type of YouTube content they should watch (e.g., [23]). In this regard, Guo, Kim and Rubin [14] support the idea that YouTube content is beneficial when it raises students' engagement, learning quality, and needs. So, when teachers adopt YouTube in their instruction, they must consider their students' needs.

4.4. The presence of the teacher in the videos

The results showed that less than half of both samples, 48% "M & S" and 45% "L & L" prefer the presence of a teacher in the video in three different forms: live, class recorded, and teacher present). More than half prefer a teacher's voice only (55 % of "L & L" and 52% of "M & S"). The results seem to go along with the research. There is consistency regarding the effect or preference for the instructor's presence. Henderson and Schroeder [18] reviewed twelve studies that had inconsistent outcomes as to the presence of the instructor in the video. The studies did not show convincing evidence of whether the instructor should be present in the video. So, it is unsurprising that students in this sample were divided as to whether the instructor should be present in the video. Even such presence as preferred was leaning more toward a real teacher presenting the lesson in the video.

According to Heidig and Clarebout [17], the instructor's presence in the video may affect students' motivation and learning. However, as research is inconclusive, other factors may be considered. One of those would be the cognitive explanation (e.g., [28]) that portrays that learning is affected by processing both what we hear (the instructor's words) and see (the instructor and what s/he presents as information and illustrations). Such processing causes a lot of processing burden on the learner. This is because it is related to cognitive capacity in online learning, such as videos [18]. This capacity could be essential, extraneous, or generative [29]. The essential relates to the processing of the task. The extraneous relates to external factors that do aid learning. The last is generative, necessary for incorporating the information in long-term memory [28]. Therefore, whether those processing factors determine the instructor's presence is essential as it helps to learn [5]. The instructor's presence may help to learn as instructors signal/point out the important information [2, 41, 42].

Moreover, Domagk [10] showed that the instructor's presence provides social cues that impact students' learning. Examples are gestures, facial expressions, eye gaze, and human-like movements [7, 26, 31]. It should also be noted that the instructor's presence may hurt the student's learning from videos; as mentioned earlier, processing is done by words and pictures. This may have a burden on the learners' processing of information. They may be split between the information written or spoken and the picture of the teacher or his speaking and gestures [4, 21].

5. Conclusion

Various factors influence students' preferences for videos, including the length of the video, the type of video content, and the teacher's presence in the video.

Firstly, this study found that students prefer videos between 5 to 10 minutes. This correlates with the results of Gaur and Bohra [13], which found that more than 60% of students prefer videos less than 15 minutes long, agreeing that this timeframe works best for Open Distance Learning. Similarly, Hamid and El Samad [15] recommend videos to be around 14 minutes in length. Generally, the optimal length of videos is suggested to be between 5 and 15 minutes. Shorter videos can focus on specific topics and require less time to view, thus attracting learners' attention more effectively and maintaining their interest. With engaging content, shorter videos may also succeed in capturing learners' limited attention span. Thus, it is possible to make a short presentation exciting and lively by conveying minimal information [49].

Secondly, the present study also found that the students liked most content related to the nature of baccalaureate questions; students may focus on a particular type of content. We observe that students in the Math & Science division search for content providing solutions to "Bac exercises" or exercises from textbooks, as baccalaureate questions typically follow this format. By doing so, learners train themselves to solve these exercises. Conversely, students in the Literature & Languages division seek content that offers methods for problem-solving exercises, focusing on approaching and solving them. Notably, not all students are interested in videos that merely present lessons. So, students seek content that aligns with the format and demands of baccalaureate questions rather than focusing on instructional lessons.

Third, according to the study, most students prefer video presentations with the teacher's voice. In general, several studies indicate that the visual design of multimedia learning materials directly impacts students' learning [24, 38]. According to Heidig and Clarebout [17], the instructor's presence in the video may affect students' motivation and learning. However, as research is inconclusive, other factors may be considered. One of those would be the cognitive explanation (e.g., [28]) that portrays that learning is affected by processing both what we hear (the instructor's words) and see (the instructor and what s/he presents as information and illustrations). Such processing causes a lot of processing burden on the learner. This is because it is related to cognitive capacity in online learning, such as videos [18]. This capacity could be essential, extraneous, or generative [29]. The essential relates to the processing of the task. The extraneous relates to external factors that do aid learning. The last is generative, necessary for incorporating the information in long-term memory [28]. Therefore, the question arises whether those processing factors determine the instructor's presence is important as it helps to learn [5]. The instructor's presence may help to learn as instructors signal/ point out the important information [2, 41, 42]. Moreover, Domagk [10] showed that the instructor's presence provides social cues that impact students' learning. Examples are gestures, facial expressions, eye gaze, and human-like movements [7, 26, 31]. It should also be noted that the instructor's presence may hurt the student's learning from videos; as mentioned earlier, processing is done by words and pictures. This may have a burden on the learners' processing of information. They may be split between the information written or spoken and the picture of the teacher or his speaking and gestures [4, 21].

Finally, in this study, researchers concluded that YouTube videos are compelling in informal

learning systems, but attention needs to be given to specific criteria related to new media video production. It is also necessary to raise awareness about new media technology. Utilizing YouTube videos or other similar platforms as teaching and learning tools would be beneficial. Their benefits include promoting teaching and learning, as their contents can be adapted to students' needs, and facilitating interaction between teachers and students, whether in live sessions or recorded ones discussed in classes.

6. Recommendations

This research has shown the widespread use of applications that help students to learn. The following recommendations are given here for policy and future research:

- Encourage teachers to include the use of videos as a blended learning tool.
- In order to ensure that students follow educational videos, we must consider what they want.
- Video length and content type should be considered when creating educational videos.
- Educational research institutions, such as universities or the National Institute for Educational Research, should concentrate more on conducting research on the use of online learning and applications, such as YouTube, in the learning and teaching processes.

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The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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