European Journal ofEducation and Pedagogy
www.ej-edu.org

Video as an Educational Tool for Teaching and Learning for Primary School Students: A Research Approach by Greek Teachers

Filippos Evangelou

ABSTRACT

The aim of this study is to explore the views of active teachers in primary schools on the benefits (potential/advantages), barriers (limitations/disadvantages) and selection criteria regarding the use of video as an educational tool in teaching and learning for primary school students. To fulfil this purpose, a qualitative research approach was chosen and the opinions of 15 active Greek teachers were recorded. Convenience sampling was applied for the selection of the sample. The research was implemented using an appropriately designed anonymous questionnaire in the form of a written paper, which included three main open-ended questions and was considered for the purposes of the research as an open-ended structured interview type questionnaire. The following conclusions emerged from the findings: a) The main advantages recorded by the teachers were the visualization and understanding of abstract concepts, the mobilization of students' attention, the option to pause and restart at any point, accessibility, openness, etc., b) The main barriers are that it takes a lot of time to find the appropriate video, the risk of low quality of the video, lack of knowledge and skills of instructors for pedagogical use of video, lack of technological equipment in schools, passive activity, etc., (c) The main criteria for selecting a video are the duration of the video, the connection with the profile and needs of the students, the possibility of accessibility for students with special needs, etc.

Keywords: educational tool, Greek teachers, video, views.

Published Online: February 16, 2023

ISSN:2736-4534

DOI: 10.24018/ejedu.2023.4.1.575

F. Evangelou*
Hellenic Open University, Greece, Patras
(e-mail: filipevang@gmail.com)

****Corresponding Author***

I. INTRODUCTION

The expanded application of Information and Communication Technologies (ICT) in the educational process has changed the learning environment, resulting in new dimensions in both the structural and organizational framework of the teaching process and the teaching role of the modern teacher (Başaran, 2021; Fykaris, 2012; Pattier, 2021a; Rangarajan *et al*., 2019). Students both in and out of school are in daily contact with Digital Media and especially Audiovisual Media, among which video is one of them (Bardakcı, 2019; European Commission, 2010; Papadimitriou & Sofos, 2019; Rangarajan *et al*., 2019; Unesco, 2011). Continuous technological development allows video to be more accessible, faster, and easily transferable from platform to platform and device to device. In today's school, ICT offers the possibility of viewing, storing, integrating into learning environments, interacting, and even creating videos in the classroom, actively engaging students in collaborative learning activities (Papadimitriou & Sofos, 2022; Solé - Llussà *et al*., 2022).

Regarding educational videos, it is worth noting that they have been used for years at all levels of education. Educational videos are a form of asynchronous audiovisual formats that seek to transfer and present educational content in an appropriately didactically transformed and pedagogically documented way (Sofos, 2019). More specifically, video is a rich, powerful and dynamic educational medium - it contains text and sound and in some cases can have dynamic or moving images (Bates, 2019)-for the narration, presentation, visualization and representation of educational information, but also to support teaching and learning processes (Bates, 2019; Laaser & Toloza, 2017; Papadimitriou, 2014) since it can present information in an attractive and consistent way (Harsasi, 2015; Kokić & Rukavina, 2017; Koumi, 2006, 2014, 2022; Papadela *et al*., 2019; Sever *et al*., 2013; Solé - Llussà *et al*., 2022; Zhang *et al*., 2006).

The educational potential of video although a long-standing and multifaceted topic, the current possibilities of technological advances have recently reinvigorated this debate (Cattaneo *et al*., 2022). With the development of digital media and technologies, the options for designing and implementing video have expanded for many students and teachers, and learning and teaching with educational video has become part of their daily lives (Sofos, 2021a). With the evolution of digital technology and the significant reduction in the cost of reproduction and distribution, video can easily be used in the classroom, aiming to record and analyze interactions (Pea & Hay, 2002) as well as to develop critical thinking, creativity, and collaborative learning

(BECTA, 2004; Papadimitriou & Sofos, 2019, 2021). Digital video in education, when properly designed, can activate a number of learning mechanisms and can be an important educational tool (Hatzis *et al*., 2022).

In today's world there is an abundance of open audiovisual resources available, which can be searched and accessed to support enriched learning environments that meet students' expectations. Although there is such a plethora of options in audiovisual media, especially video, teachers are still far from adequately integrating or becoming familiar with video-based pedagogy and knowing the appropriate methods of integrating it into classrooms (Cattaneo *et al*., 2022; Papadimitriou & Sofos, 2021).

As an extension of this problematic, constant technological developments make educational video the focus of research, both in terms of the technological dimension and the methodology for its educational use (Koumi, 2006, 2014, 2022; Rousaki & Sofos, 2022; Solé-Llussà *et al*., 2019; Solé-Llussà *et al*., 2022; Yousef *et al*., 2014). In this context, the aim of this study is to explore the views of active Greek teachers in primary schools on the benefits (potentials/advantages), barriers (limitations/disadvantages) and selection criteria regarding the use of video as an educational tool in teaching and learning for primary school students.

II. Literature Review

Videos have been influencing the field of education for more than 80 years, each time keeping pace with technological developments, in particular with Educational Television, video cassettes, digital video, interactive video, video lectures (Sofos & Yasiranis, 2022; Rousaki & Sofos, 2022; Koumi, 2006, 2014, 2022). In recent years, the use of video has become easier than ever before both within (Yousef et al, 2014) and outside the classroom (Reisslein *et al*., 2005), and it is considered the dominant medium for teaching on the Internet (Bardakcı, 2019; Laaser & Toloza, 2017; Pattier, 2021a; Rangarajan *et al*., 2019) and is now being localized in online repositories on social media (Snelson et al, 2012; McCarthy, 2010). Typically, it is worth mentioning the great impact of edutubers (audiovisual content creators on the YouTube platform) on the use of video in both formal and informal education (Bakla & Mehdiyev, 2022; Papadopoulou & Palaigeorgiou, 2016; Pattier, 2021a; Pattier, 2021b).

Video, when used both in the classroom - formal education and outside the classroom non-formal, informal education-offers many advantages compared to other media (Berk *et al*., 2009; Evi-Colombo et al., 2020; Sofos & Yasiranis, 2022). In more detail, from numerous studies, the benefits (advantages) of using video as a teaching tool in the classroom are coded as follows:

1) Can stimulate students' interest in new knowledge and evoke emotions (Berk *et al*., 2009; Koumi, 2006, 2014, 2015, 2019, 2022; Papadimitriou, 2014; Papadimitriou *et al*., 2020; Papadimitriou & Sofos, 2021; Sofos & Yasiranis, 2022).
2) Contributes to the activation of students' pre-existing knowledge as a foundation for building new knowledge (Bates *et al*., 2016; Papadimitriou, 2014; Papadimitriou *et al*., 2020; Papadimitriou & Sofos, 2021; Sofos & Yasiranis, 2022).
3) Helps improve understanding of the content (Berk *et al*., 2009; Bohloko *et al*., 2019; Papadimitriou, 2014; Papadimitriou *et al*., 2020; Papadimitriou & Sofos, 2021; Pattier, 2021a; Sofos & Yasiranis, 2022).
4) Visualizing abstract or obscure concepts and phenomena, such as the interior of the body, microscopic elements, etc. (Evi-Colombo *et al*., 2020; Papadimitriou, 2014; Papadimitriou *et al*., 2020; Papadimitriou & Sofos, 2021; Sofos & Yasiranis, 2022).
5) Can highlight distant concepts (such as space) and lengthen it (such as the collision of two cars) or slow down time, such as the growth of a flower, etc. (Cattaneo *et al*., 2022; Cattaneo *et al*., 2019; Kant *et al*., 2017; Koum, 2015; Papadimitriou, 2014; Papadimitriou *et al*., 2020; Papadimitriou & Sofos, 2021; Pattier, 2021a; Sofos & Yasiranis, 2022; Solé-Llussà *et al*., 2022).
6) Gives a sense of immediacy and highlights the most important points of a topic in a short period of time (Harsasi, 2015).
7) Can bring the content of the lesson to life and offer the student the opportunity to "travel" to other places and times (Papadimitriou, 2014; Papadimitriou *et al*., 2020; Papadimitriou & Sofos, 2021; Sofos & Yasiranis, 2022).
8) Contributes to learning and developing skills in ways that would be impossible or very difficult to achieve through other media, such as narrative text or static images (Bates, 2015; Koumi, 2006, 2014, 2015, 2019, 2022)
9) Provides representative realistic experiences where the physical presence of the person is impossible (Koumi, 2006, 2014, 2015, 2019, 2022).
10) The temporal comfort when processing projected data (Fykaris, 2012).
11) The possibility of dialectical viewing, analysis, deepening and critical approach to visual data (Fykaris, 2012).
12) Contributes to an improved level of literacy, described as "visual literacy" and promotes digital literacy, such as through stop-motion videos (Papadimitriou, 2014; Papadimitriou *et al*., 2020; Papadimitriou & Sofos, 2021; Sofos & Yasiranis, 2022; Sun *et al*., 2017).
13) Provides accessibility and inclusion through subtitles (Pattier, 2021a; Youngblood *et al*., 2018).

However, although there are numerous advantages of using video, it is worth noting that there are also several disadvantages (limitations/obstacles) which are coded as follows:

1) Watching the video is basically a passive activity that reflects the learning model of the lecture (Bakla, 2017; Papadimitriou, 2011).
2) Learners cannot fully interact with the medium and it is considered that video will only reach its full potential in well-designed learning environments

(Krammer *et al*., 2006; Laurillard, 2012; Papadopoulou & Palaigeorgiou, 2016).

3) The time spent watching a video displaces other educational activities such as reading, playing, social interaction, etc., resulting in a lack of development of other necessary physical, mental and social skills (Guru *et al*., 2013) and consequently a decrease in the level of intellectual functioning and the will to learn (Baydar et al., 2008).
4) Linear video can lead to superficial learning and unsatisfactory sustainability of the learning outcome, a phenomenon called "couch-potato-sikap" (Ertelt *et al*., 2006; Papadopoulou & Palaigeorgiou, 2016).
5) Students' inattention when viewing the videos (Zureick *et al*., 2018; Pattier, 2021a).
6) A decrease in socialization (Albrecht, 2017; Pattier, 2021a).
7) Lack of control of students in the classroom (Beheshti *et al*., 2018; Pattier, 2021a; Tzifopoulos, 2021).
8) The difficulty of analyzing social media due to the influence of multiple factors (Thelwall, 2018; Pattier, 2021a).
9) The reality of the meta-truthing of video content, in which commercial, political, ideological or propaganda interests take precedence, in many cases, over the search for truth (Gutiérrez-Martín *et al*., 2019; Pattier, 2021a).
10) Students are often confronted with an artificial constructed "reality" and in this way a parallel world to the real one is formed, an illusion of reality, which students without a critical approach passively accept by receiving a lot of information without assuming personal will (Fykaris, 2012).
11) Teachers' lack of technical competence and relevant knowledge of educational technology, combined with their lack of self-confidence, can be a barrier to the use of technology and especially video (Tzifopoulos, 2021).
12) Inadequate technological infrastructure (such as scarce and old computers in school laboratories, network accessibility problems, etc.) and lack of up-to-date and modern educational software (Beheshti *et al*., 2018; Pattier, 2021a; Nikolopoulou & Gialamas, 2016; Tzifopoulos, 2021).
13) Inadequate or non-existent ICT training for teachers, lack of support for technology integration can reduce the use of technology in teaching, especially video (Christ *et al*., 2017; Tzifopoulos, 2021).
14) Some teachers have a negative attitude towards ICT and resist any change in their teaching practice regarding the use of video (Tzifopoulos, 2021).
15) The inability of many students to use technology due to a lack of digital media at home, creating digital and sociological gaps (Singh, 2019; Tzifopoulos, 2021).

Teachers today have the potential to use audiovisual media and especially video with defined pedagogical methods in the classroom (Papadimitriou, 2018). However, the evolution of technology enables anyone to become an educational video producer, sometimes successfully and sometimes not so much, making it difficult for the teacher to select a quality video in order to use it in teaching with defined pedagogical and teaching methods (Sofos, & Yasiranis, 2022). In this context, the teacher should be able to distinguish the qualitative characteristics of an educational video in order to select it among the others. Consequently, in order for educational video to be effectively utilized in learning and teaching, it should meet certain criteria such as (Bates, 2015; Choe *et al*., 2019; Pattier, 2021a; Pattier, 2021b; Sofos 2019; Sofos, 2021a; Sofos, & Yasiranis, 2022; Hatzis *et al*., 2022):

1) Be short - between 3 and 6 minutes - so that it can be used at any stage of the educational process as a stand-alone learning object. Typically, this is confirmed by recent research on students who prefer to use video in their education, as long as it is not too long (Alpert & Hodkinson, 2019; Pattier, 2021b)
2) Be useful to the teacher so that they can make support for a curriculum-based knowledge area, such as an interdisciplinary, concept-cent red, interdisciplinary or other approach.
3) Be accompanied by teaching materials - such as worksheets, parallel texts - so that the learner can work autonomously and independently.
4) Can be modified into other formats, such as documentary, video lesson, explainer video, short film with thematic focus, animation, etc.
5) Be closely related to areas familiar to students that promote positive emotions, which shows a link between the users' emotional feelings and their preferences when choosing videos.
6) The decision on the most appropriate video instructional format depends on the factors of the target group and the circumstances of the course context, the content to be presented, the prior knowledge of the learners, the expertise available, the technology and the financial resources available to create them.

III. METHOD

A. Research Questions

The research questions are the following:

1) What benefits (possibilities/advantages) do teachers record in teaching using video to primary school students?
2) What barriers (limitations/disadvantages) do teachers record in teaching using video to primary school students?
3) What criteria do teachers record for selecting a video to be used in teaching and learning with primary school students?

B. Sample

The present research was conducted during the winter semester, in December 2022, by Greek teachers in primary schools in Greece who were also studying as postgraduate students at the Hellenic Open University, in the Postgraduate Studies Program: "Education and Technologies in Distance Teaching and Learning Systems-Education Sciences" and in particular in the Thematic Unit:

ETA62 entitled: "Digital Media in Education and Communication."

The sample of the survey was 15 Greek teachers, of which 12 are women and 3 are men.

Convenience (or purposive) sampling (Creswell, 2014) was applied to select the sample since the researcher focused on a student group of the Hellenic Open University, in which he was a teacher-advisor and it had already been empirically established that there was frequent communication between the students about the subject of their studies.

C. Research and Information Analysis Tool

Based on the open-ended nature of the research, a qualitative approach was chosen (Creswell, 2014). The research was implemented using a suitably designed anonymous questionnaire in the form of a written assignment, which included three key open-ended questions to explore the views of the research subjects. More specifically, the written task was worded as follows: "Suppose you are a teacher in a primary school. You are invited through your experience in the classroom, in case you use video as a teaching tool in your teaching, to answer the following three questions:

1) Describe, in a concise way, what you consider to be the benefits (possibilities/advantages) of using video in teaching and learning for primary school students.
2) Describe briefly what you consider to be the obstacles (limitations/disadvantages) to the use of video in teaching and learning for primary school pupils.
3) What criteria would you use to select a video to be used in teaching and learning with primary school students?"

The internet and in particular the modern and asynchronous e-learning platform of the Hellenic Open University was defined as the data collection site. The data of the research were the written work of the research subjects and were considered for the needs of the research as an open-ended structured interview type questionnaire.

Content analysis was chosen as the method of information analysis, as it lends itself to a systematic description of the content of written and spoken human communication (Berg, 1998). Following the steps of this method, the researcher read through all the recorded data several times to gain a comprehensive understanding as to the participants' beliefs. Then, the content of the written assignments was sorted into appropriate categories so that it could be described in a systematic way. In other words, coding of the data was carried out and meanings were assigned to the data based on the three research questions. Each informant (teacher) was given a code from T1 to T15 adhering to this code throughout the research, where T=teacher.

The main limitation of this research is the small sample size and the characteristics of the informants. As a consequence, the set of results has the character of indications rather than generalizable results.

IV. Results

Teachers' responses to the three open-ended questions of the questionnaire, using the content analysis technique, were coded into three thematic analysis categories that emerged from the clustering of similar views expressed by the survey subjects and corresponded to the three research questions (Tables I, II and III).

The analysis categories in conjunction with the research questions - that emerged were as follows:

1) The benefits (potential/advantages) of using video in teaching and learning for primary school students.
2) The barriers (limitations/disadvantages) of using video in teaching and learning in primary school students.
3) The criteria for selecting video for use in teaching and learning with primary school students.

The benefits, barriers, and selection criteria for the utilization of video in teaching and learning in primary school students according to the opinion of the teachers who participated in the study are shown in Tables (1), (2), (3) below. The left side of each table shows each category on the right side - in two columns (frequency and percentage) - shows the number of teachers who included each individual benefit, barrier and criterion in their work.

From the teachers' responses, 7 benefits emerge (Table I). More specifically, 14 out of 15 teachers (93%) mentioned visualization and understanding of abstract concepts as a benefit/advantage, 12 out of 15 (80%) mentioned that it mobilizes the attention interest of students, 11 out of 15 (73%) reported the option to pause and restart at any point and at any time, 9 out of 15 (60%) reported skill development, 5 out of 15 (33%) reported that digital literacy is cultivated and that it has great accessibility, openness and there is no location barrier. Finally, 4 out of 15 (27%) reported that they provide the possibility of an integrated way of teaching.

TABLE I: Response Coding of The Variable Question (I): Benefits (Potential/Advantages)

Category of answer to question (i)	Frequency (N)	Percent (%)
Visualization and understanding of abstract concepts	14	93%
Mobilizes the attention, interest of students	12	80%
Option to pause and restart at any point and at any time	11	73%
Developing skills such as critical thinking, creativity	9	60%
Cultivating Digital Literacy	5	33%
It has great accessibility, openness and there is no barrier of place	5	33%
Integrated way of teaching	4	27%

Six barriers emerge from the teachers' responses (Table II). More specifically, 10 out of 15 teachers (67%) mentioned as a barrier that it takes a lot of time to find the appropriate video and prepare it for teaching, 8 out of 15 (53%) mentioned as a barrier the risk of low quality of the video, 6 out of 15 (40%) mentioned as barriers the lack of knowledge and skills of teachers for pedagogical use of the video and the lack of technological equipment in schools. Finally, 5 out of 15 (33%) cited as barriers the fact that

students are not able to interact with the content and remain passive viewers, as well as the risk of losing control of the learning instruction.

TABLE II: RESPONSE CODING OF THE VARIABLE-QUESTION (II): BARRIERS (LIMITATIONS/DISADVANTAGES)

Category of answer to question (ii)	Frequency (N)	Percent (%)
Sufficient time is required to find the right video and prepare it for teaching	10	67%
Risk of low video quality	8	53%
Lack of knowledge and skills of trainers for pedagogical use of video	6	40%
Lack of technological equipment in schools	6	40%
Students are not able to interact with its content and remain passive spectators	5	33%
Risk of losing control of learning teaching	5	33%

Eight criteria emerged from the teachers' responses (Table III). More specifically, 9 out of 15 teachers (60%) mentioned as criteria the link to the students' profile, such as age, cognitive background, etc, and the duration of the video (usually short), 8 out of 15 (53%) mentioned as criteria the connection to the subject matter, teaching content and that it should contain features that arouse students' interest - active engagement, 7 out of 15 (47%) mentioned the connection to students' needs and interests, 5 out of 15 (33%) mentioned as criteria the usability and the possibility of accessibility for students with special needs (e.g. subtitles). Finally, 3 out of 15 (20%) mentioned that it should be open video for everyone to access.

TABLE III: RESPONSE CODING OF THE VARIABLE -QUESTION (III): SELECTION CRITERIA FOR VIDEO

Category of answer to question (iii)	Frequency (N)	Percent (%)
Link to the students' profile, such as age, cognitive background, etc.	9	60%
The duration of the video (usually short)	9	60%
Link to the subject, teaching content	8	53%
Contain features that arouse the interest - active involvement of students	8	53%
Connecting with students' needs and interests	7	47%
Handy	5	33%
The possibility of accessibility for pupils with special needs (e.g., subtitles)	5	33%
Open video for all to access	3	20%

V. DISCUSSION

The teachers' responses to the three main open questions as shown in Tables I, II and III reveal several interesting facts about the benefits (possibilities/advantages), barriers (limitations/disadvantages) and selection criteria regarding the use of video as an educational tool in teaching and learning for primary school students.

In more detail, regarding the benefits (potential/advantages), a very high percentage of teachers (93%) stated as the primary advantage of using video the visualization and understanding of abstract concepts, which is also evident in numerous studies (Evi-Colombo *et al*., 2020; Papadimitriou, 2014; Papadimitriou *et al*., 2020; Papadimitriou & Sofos, 2021; Sofos & Yasiranis, 2022). Typically, a study (Papadimitriou *et al*., 2020) reported that video provides the possibility of visualizing abstract or obscure concepts and phenomena, such as the inside of body, microscopic elements. Then, a very high percentage of teachers (80%) reported that it mobilizes the attention, interest of students, an advantage that is reported in several studies (Berk *et al*., 2009; Koumi, 2006, 2014, 2015, 2019, 2022; Papadimitriou, 2014; Papadimitriou *et al*., 2020; Papadimitriou & Sofos, 2021; Sofos & Yasiranis, 2022). A high priority of statements (about 73% of respondents) was also reported to be the possibility to choose to pause and restart at any point and at any time, which is also found in several studies (Cattaneo *et al*., 2022; Cattaneo *et al*., 2019; Kant *et al*., 2017; Koum, 2015; Papadimitriou *et al*., 2020; Papadimitriou, 2014; Papadimitriou & Sofos, 2021; Pattier, 2021a; Sofos & Yasiranis, 2022; Solé - Llussà *et al*., 2022). More than half of the teachers reported skill development as an advantage. In this context, longitudinal studies report that video contributes to learning and skill development in ways that would be impossible or very difficult to achieve with other media, such as narrative text or static images (Koumi, 2006, 2014, 2015, 2019, 2022). Finally, about a third of respondents (33%) cite as an advantage the fact that video has high accessibility, openness and there is no barrier of place. This is an interesting finding because it was not identified in similar research.

In terms of barriers, a fairly high percentage of teachers (67%) stated that the primary barrier to video utilization is the fact that it takes a lot of time to find the right video and prepare it for teaching. This is an interesting finding since it is not found in similar studies focusing on pedagogical utilization of video. Over half of teachers (53%) cited the risk of poor video quality as a barrier, a barrier reported in few studies (Beheshti *et al*., 2018; Pattier, 2021a). Several teachers (40%) cited lack of knowledge and skills of instructors for pedagogical use of video and lack of technological equipment in schools as barriers, which also emerge in related research (Beheshti *et al*., 2018; Pattier, 2021a; Nikolopoulou & Gialamas, 2016; Tzifopoulos, 2021). Finally, about a third of respondents (33%) cite as barriers the fact that students are not able to interact with the content and remain passive spectators, as well as the risk of losing control of the learning instruction. These barriers are articulated in similar research (Bakla, 2017; Beheshti *et al*., 2018; Papadimitriou, 2011; Pattier, 2021a; Tzifopoulos, 2021).

At the same time, regarding the criteria for selecting a video, a high percentage of teachers (60%) stated as primary criteria the link to the students' profile, such as age, cognitive background, etc., and the duration of the video. Next in priority a fairly high percentage (53%) stated the connection with the subject matter, teaching content and that the video should contain features that arouse the interest - active engagement of students. Then about half of the teachers (47%) mentioned as a criterion the connection with the needs and interests of students. These five criteria are

identified in recent research (Bates, 2015; Choe *et al*., 2019; Pattier, 2021a; Pattier, 2021b; Sofos 2019; Sofos, 2021a; Sofos, & Yasiranis, 2022; Hatzis *et al*., 2022). Around a third of respondents (33%) cite the ability to have accessibility for students with special needs, such as subtitles, as a criterion. This is an interesting finding because it was not identified in similar research.

VI. Conclusion

Teaching and learning based on Digital Media, such as video, requires teachers to take on new roles, as they have the responsibility to create interactive environments that will inspire their students and engage them in the learning process. Teachers, through a differentiated role and using ICT (such as video), are reflecting, and revising traditional teaching practices and are called upon to become agents for promoting innovation in schools. At the same time, they are encouraged to experiment with new teaching and learning practices, without fear of failure, since the culture of experimentation and the 'unlearning of error' are expected to bring changes in the learning process (Papadimitriou & Sofos, 2022).

As the present study shows, modern teachers in a high percentage are aware of the advantages, barriers, and criteria regarding the use of video as an educational tool in teaching and learning for primary school students. However, although teachers possess this knowledge and information, they often face difficulties in effectively utilizing and integrating it in their daily teaching practice (Papadimitriou, 2014).

In this context, the use of video in the teaching and learning of primary school students is recommended to be accompanied by interactive activities to avoid passive monitoring (Papadimitriou, 2014; Rieber, 1990). Although even the simple viewing of a video (Lee & Huston, 2003) captures students' interest, it is found that students deepen and assimilate better when they interact and actively participate in the educational process, when they repeat viewing, critically reflect, act, and reflect (Papadimitriou, 2014).

It is clear, as it follows both from the present research and from the above literature review, that videos can be integrated and used in a targeted pedagogical way in the context of the teaching and learning process, so as to enhance the learning process or optimize learning outcomes. The video from a simple presentation tool, by integrating it into learning environments or combining it with other interactive elements, becomes a core of communication with students, enabling them to keep their interest alive and follow their personal learning rhythm. However, for this to happen, it must be chosen by the teacher on the basis of specific criteria (such as being short, accompanied by educational material, etc.), with the educational objectives as a reference point, and applied in a creative way on the basis of a specific teaching method. The purposeful didactic and pedagogical use of video can make a positive contribution to increasing motivation, sensing phenomena and processes, and selective information (Sofos, 2021b; Hatzis *et al*., 2022).

In conclusion, it is worth noting that video is necessary to be used - often - by the teacher as an educational tool in the teaching and learning of primary school students in a flexible and reflective way, in order to contribute to the formation of an "open field" in the teaching process (Papadimitriou 2014; Fykaris, 2012) with the aim of actively involving the student, designing and organizing opportunities for rich learning experiences, fostering communication and social interactions, taking initiatives and participating in activities that help students apply their knowledge and acquire the digital skills needed in the 21st century.

References

Albrecht, R. (2017). Exploring alternative pathways: Children, pedagogy and play in the age of digital technology. Ricerche di Pedagogia e Didattica. *Journal of Theories and Research in Education*, 12 (2), 89–111. Doi:10.6092/issn.1970-2221/7083.

Alpert, F., & Hodkinson, C. S. (2019). Video use in lecture classes: Current practices, student perceptions and preferences. *Education and Training*, 61(1), 31–45. Doi:10.1108/ET-12-2017-0185.

Bakla, A. (2017). Interactive videos in foreign language instruction: a new gadget in your toolbox. *Journal of the Faculty of Education*, 13 (1), 124–137. Doi: 10.17860/mersinefd.305769.

Bakla, A., & Mehdiyev, E. (2022). A qualitative study of teacher-created interactive videos versus YouTube videos in flipped learning. *E-Learning and Digital Media*, 19 (5), 495–514. Doi: https://doi.org/10.1177/20427530221107789.

Bardakcı, S. (2019). Exploring high school students' educational use of YouTube. *International Review of Research in Open and Distributed Learning*, 20 (2), 260–278. Doi:10.19173/irrodl.v20i2.4074.

Başaran, M. (2021). Meta-thematic analysis of flipped classroom applications. *European Journal of Education Studies*. 8 (10), 61–88.

Bates, A. W. (2015). *Teaching in a digital age: Guidelines for designing teaching and learning*. BCcampus.

Bates, M. S., Phalen, L., & Moran, C. G. (2016). If you build it, will they reflect? Examining teachers' use of an online video - based learning website. *Teaching and teacher education*, 58, 17–27. Retrieved on 18 December 2022, from URL: https://www.learntechlib.org/p/202028/.

Bates, A.W. (2019). *Teaching in a Digital Age–Second Edition.* Vancouver, B.C.: Tony Bates Associates Ltd. Retrieved on 18 December 2022, from URL: https://pressbooks.bccampus.ca/teachinginadigitalagev2/.

Baydar, N., Kağitçibaşi, Ç., Küntay, A. C., & Gökşen, F. (2008). Effects of an educational television program on preschoolers: Variability in benefit. *Journal of Applied Developmental Psychology*, 29, 349–360. Doi: 10.1016/j.appdev.2008.06.005.

BECTA (2004). *Digital video technologies*. Retrieved on 22 January 2021, from URL: http://foi.becta.org.uk.

Beheshti, M., Taspolat, A., Kaya, O. S., & Sapanca, H. F. (2018). Characteristics of instructional videos. *World Journal on Educational Technology: Current Issues*, 10 (1), 61–69. Doi:10.18844/wjet.v10i1.3186.

Berg, B. (1998). *Qualitative Research Methods for the Social Sciences*. Boston: Pearson.

Berk, R. A. (2009). Multimedia teaching with video clips: TV, movies, YouTube, and mtvU in the college classroom. *International Journal of Technology in Teaching & Learning*, 5(1), 1–21.

Bohloko, M., Makatjane, T. J., George, M. J., & Mokuku, T. (2019). Assessing the effectiveness of using YouTube videos in teaching the chemistry of group i and vii elements in a high school in Lesotho. *African Journal of Research in Mathematics, Science and Technology Education*, 23 (1), 75–85. Doi:10.1080/18117295.2019.1593610.

Cattaneo, A., Evi-Colombo, A., Ruberto, M., & Stanley, J. (2019). *Video Pedagogy for Vocational Education. An overview of video-based teaching and learnin*g. Turin: European Training Foundation.

Cattaneo, A.A.P, De Jong, F., Ramos, J.L., Laitinen-Väänänen,S., Pedaste, Leijen, M.A., Evi-Colombo, A. , Monginho, R., Bent, M., Velasquez-Godinez, E., & Van Steenbergen, R. V. (2022). Video-based collaborative learning: a pedagogical model and instructional design tool emerging from an international multiple case study. *European Journal of Teacher Education*, 45 (5), 1–25 Doi: 10.1080/02619768.2022.2086859.

Choe, R. C., Scuric, Z., Eshkol, E., Cruser, S., Arndt, A., Cox, R., & Crosbie, R. H. (2019). Student satisfaction and learning outcomes in

asynchronous online lecture videos. *CBE-Life Sciences Education*, 18 (55), 1–14. Doi:10.1187/cbe.18-08-0171.

Christ, T., Poonam Arya, P. & Chiu, M. M. (2017). Video use in teacher education: An international survey of practices. *Teaching and Teacher Education*, 63, 22–35.

Creswell, J. W. (2014). *Research design: Qualitative, quantitative, and mixed method approaches* (4th ed.). Thousand Oaks: CA, Sage.

Ertelt, A., Renkl, A., & Spada, H. (2006). Making a difference: exploiting the full potential of instructionally designed on-screen videos. *In Proceedings of the 7th international conference on Learning sciences* (pp. 154–160). International Society of the Learning Sciences.

European Commission (2010). *The Digital Agenda for Europe*. Retrieved on 12 January 2019, from URL: https://ec.europa.eu/digital-agenda/en/digital-agenda-europe-2020-strategy.

Evi-Colombo, A., Cattaneo, A., & Bétrancourt, M. (2020). Technical and Pedagogical Affordances of Video Annotation: A Literature Review. *Journal of Educational Multimedia and Hypermedia*, 29 (3), 193–226. Waynesville, NC USA: Association for the Advancement of Computing in Education (AACE). Retrieved on 5 January 2023 from URL: https://www.learntechlib.org/p/215718.

Fykaris, I. (2012). The use of video and animation in teaching: A teaching possibility. *The Educational*, 103-104, 233–247.

Guru, C., Nabi, A., Raslana, R. & Mahesh, B. P. (2013). Role of Television in Child Development. *Journal of Mass Communication & Journalism*, 3 (3), 153. Doi: 10.4172/2165-7912.1000153.

Gutiérrez-Martín, A., Torrego-González, A., & Vicente-Mariño, M. (2019). Media education with the monetization of YouTube: The loss of truth as an exchange value. *Culture and Education*, 31(2), 281–295. Doi:10.1080/11356405.2019.1597443.

Harsasi, M. (2015). The Use of Open Educational Resources Online: A study of Students' Perception. *Turkish Online Journal of Distance Education*, 16 (3), 74–87. Retrieved on 18 December 2022, from URL: https://dergipark.org.tr/en/pub/tojde/issue/16948/176923.

Hatzis, Ath., Indopoulou, N., & Sofos, A. (2022). The music video "Apokleros" as a teaching tool for awareness raising in the context of intercultural education. *Pedagogical Currents in the Aegean*,12 (1), 65–75. Retrieved on 18 December 2022, from URL: https://tinyurl.com/yap5tyht.

Kant, J. M., Scheiter, K., & Oschatz, K. (2017). How to sequence video modeling examples and inquiry tasks to foster scientific reasoning. *Learning and Instruction*, 52, 46–58.

Kokić, I. B., & Rukavina, S. (2017). Learning from digital video cases: How future teachers perceive the use of open-source tools and open educational resources. *Knowledge Cultures*, 5(5), 115–130.

Koumi, J. (2006). *Designing video and multimedia for open and flexible learning* (1st ed.). Routledge.

Koumi, J. (2014). *Potent pedagogic roles for video by Jack Koumi*. Educational Media Production Training.

Koumi, J. (2015). Learning outcomes afforded by self-assessed, segmented video–print combinations. *Cogent Education*, 2, 26–27. Doi: 10.1080/2331186X.2015.1045218.

Koumi, J. (2019). *Guidelines for pedagogic video design and production*. Retrieved on 18 December 2022, from URL: http://jackkoumi.co.uk.gridhosted.co.uk/wpcontent/uploads/2014/11/gfp-video-production.pdf.

Koumi, J. (2022). *Pedagogic video design principles*. Retrieved on 20 June 2002 from: URL: https://www.academia.edu/40074782/Pedagogic_Video_Design_Principles.

Krammer, K., Ratzka, N., Klieme, E., Lipowsky, F., Pauli, C., & Reusser, K. (2006). Learning with classroom videos: Conception and first results of an online teacher training program. *ZDM*, 38 (5), 422–432.

Laaser, W., & Toloza, E. (2017). The Changing Role of Educational Video in Higher Distance Education. *International Review of Research in Open and Distributed Learning*, 18 (2), 264–276. Retrieved on 18 December 2022, from URL: https://files.eric.ed.gov/fulltext/EJ1138780.pdf.

Laurillard, D. (2012). *Teaching as a design science. Building pedagogical patterns for learning and technology*. New York: Routledge.

Lee, J. H., & Huston, A.C. (2003). Educational Televisual Media Effects. Ch. 5 in E.L. Palmer & B. M. *Young's The Faces of Televisual Media: Teaching, Violence, Selling to Children*. New Jersey: Lawrence Erlbaum Associations, Pub.

McCarthy, J. (2010). Blended learning environments: Using social networking sites to enhance the first-year experience. *Australasian journal of educational technology*, 26 (6), 729–740.

Meseguer-Martinez, A., Ros-Galvez, A., & Rosa-Garcia, A. (2017). Satisfaction with online teaching videos: A quantitative approach. *Innovations in Education and Teaching International*, 54(1), 62–67. Doi: 10.1080/14703297.2016.1143859.

Nikolopoulou, K., & Gialamas, V. (2016). Barriers to ICT use in high schools: Greek teachers' perceptions. *Computers in Education*, 3 (1), 59–75.

Papadela, H.V., Koutsouba, M.I., & Mavroeidis, H. (2019). Video as a learning tool in multimodal distance early childhood education: an evaluation model. In Lionarakis, A., Manousou, E., Ioakeimidou, V., Niari, M., Angelis, A., Sfakiotaki, K. & Koutzeklidou, V. (Eds.), *Proceedings of the 10th Conference on Open and Distance Education. Shaping the Future of Education*, 1 (A), 62–75, Retrieved on 18 December 2022, from URL: https://eproceedings.epublishing.ekt.gr/index.php/openedu/article/view/2334/2551.

Papadimitriou, S. (2011). The role of educational television in supporting school education in the internet era. *Open Education - The Journal for Open and Distance Education and Educational Technology*, 7 (2), 99–118. Retrieved on 25 January 2022, from URL: https://ejournals.epublishing.ekt.gr/index.php/%20openjournal/article/view/9780.

Papadimitriou, S. (2014). Good Practices for the Use of Video in Learning. In N. Tzimopoulos, C. Avgeris & A. Louvris (Eds.), *Proceedings of the 1st Panhellenic eTwinning Conference "Utilization of ICT in collaborative school programs"* (pp. 645–655). Retrieved on 18 December 2022, from URL: https://www.etwinning.gr/images/praktika2014/1o-CONF-2014-Praktika.pdf.

Papadimitriou, S. (2018). Interactive digital teaching scenario for the use and creation of videos in science teaching. *Open Education-The Journal for Open and Distance Education and Educational Technology*. 14 (2), 10–25. Doi: 10.12681/jode.19002.

Papadimitriou, Σ., & Sofos, A. (2019). Primary Education Teachers' Online Training program "Digital Literacy in Audiovisual Media on Internet Learning Environments": Outcomes and Proposals by the Pilot Implementation. *Open Education-The Journal for Open and Distance Education and Educational Technology*. 15 (1), 73–91. Doi: https://doi.org/10.12681/jode.19773.

Papadimitriou, S., Manousou, E., Hartofilika, A., Ioakeimidou, V., & Karagianni, E. (2020). Educational Television: proposals for pre-school education. Ioakeimidou, S. Papadimitriou & E. Karagianni (Eds.), *Massive Open Online Course (MOOC): "Training of Primary & Secondary Education Teachers in Distance Education."* Athens: Institute of Educational Policy, Hellenic Open University.

Papadimitriou, S., & Sofos, A. (2021). Critical analysis of audiovisual media: methodologies and good practices. *Pedagogical Currents in the Aegean*, 12, 92–116. Retrieved on 30 December 2022, from URL: https://tinyurl.com/yaqf4m6y.

Papadimitriou, S., & Sofos, A. (2022). *Utilization of audiovisual media in modern schools. A guide for teachers*. Athens: National Centre for Audiovisual Media and Communication-EKOME. Retrieved on 18 December 2022, from URL: https://www.ekome.media/wp-content/uploads/Papadimitriou_Sofos_AV_Media_in_Classroom_Guide.pdf.

Papadopoulou, A., & Palaigeorgiou, G. (2016). Interactive Video, Tablets and Self-paced learning in the classroom: Preservice teachers' perceptions. *13th International Conference on Cognition and Exploratory Learning in Digital Age (CELDA 2016)*. At: Mannheim, Germany.

Pattier, D. (2021a). Teachers and YouTube: The use of video as an educational resource. *Ricerche Di Pedagogia E Didattica. Journal of Theories and Research in Education*, 16 (1), 59–77. Doi: https://doi.org/10.6092/issn.1970-2221/11584.

Pattier, D. (2021b). Science on YouTube: Successful Edutubers. *TECHNO REVIEW. International Technology, Science and Society Review*, 10 (1), 1–15. Doi: https://doi.org/10.37467/gka-revtechno.v10.2696.

Pea, R., & Hay, K. (2002). *Report to the National Science Foundation*. In the CILT Workshop on Digital Video Inquiry in Learning and Education. Retrieved on 22 January 2021, from URL: www.cilt.org/seedgrants/community/PeaFinalReport2002.pdf.

Rangarajan, K., Begg, K., & Somani, B. (2019). Online digital media: The uptake of YouTube-based digital clinical education (DCE). American Journal of Distance Education, 33(2), 142–150. Doi:10.1080/08923647.2019.1582308.

Reisslein, J., Seeling, P., & Reisslein, M. (2005). Video in distance education: ITFS vs. web-streaming: Evaluation of student attitudes. *The Internet and Higher Education*, 8 (1), 25–44.

Rieber, L. R. (1990). Using computer animated graphics in science instruction with children. *Journal of Educational Psychology*, 82, 135–140.

Rousaki F., & Sofos A. (2022). Video as an educational tool: Basic principles and techniques of design and implementation by Jack

Koumi. *Pedagogical Currents in the Aegean*, 12(1), 128–133. Doi: https://doi.org/10.12681/revmata.32046.

Sever, S., Oguz-Unver, A., & Yurumezoglu, K. (2013). An effective presentation of inquiry-based classroom experiments using teaching strategies that employ video and demonstration methods. *Australasian Journal of Educational Technology*, 29 (3), 450–463.

Singh, R. (2019). Barriers of technology integration in teaching English. *International Journal of Academic Research in Business, Arts and Science*, 1(2), 24–37.

Snelson, C., Rice, K. & Wyzard, C. (2012). Research priorities for YouTube and video-sharing technologies: A Delphi study. *British Journal of Educational Technology*, 43(1), 119–129.

Sofos, A. (2019). *Pedagogical features for the design of an educational film*. Electronic notes. Rhodes: University of Aegean.

Sofos, A. L. (2021a). Diocesan study of criteria for evaluating educational videos. *Open Journal of Animation, Film and Interactive Media in Education and Culture [AFIMinEC]*, 2 (1), 1–11. Doi: https://doi.org/10.12681/afiinmec.27153.

Sofos, A. (2021b). Pedagogical use of film and video in the educational process. *Pedagogical Currents in the Aegean*, 12, 75–91. Retrieved on 18 December 2022, from URL: https://tinyurl.com/y9jbfj47.

Sofos, A., & Yasiranis, S. (2022). *Film and video in education - Approaches and practices of classroom utilization* [Graduate textbook]. Kallipos, Open Academic Publications. Retrieved on 28 December 2022, from URL: https://www.lsofos.com/products/i-tainia-kai-to-vinteo-stin-ekpaideysi/.

Solé - Llussà, A., Casanoves, M., Salvadó, Z., Garcia-Vallve, S., Valls, C., & Novo, M. (2019). Annapurna expedition game: applying molecular biology tools to learn genetics. *Journal of Biological Education*, 53 (5), 516–523.

Solé - Llussà, A., Aguilar, D., & Ibáñez, M. (2022). The effect of an instructional intervention based on the use of video-worked examples to promote elementary students‟ science process skills. *International Journal of Education in Mathematics, Science, and Technology (IJEMST)*, 10 (3), 753–772. Doi: https://doi.org/10.46328/ijemst.2158.

Sun, K.-T., Wang, C. - H., & Liu, M. - C. L. (2017). Stop-motion to Foster Digital Literacy in Elementary School. *Media Education Research Journal*. 51 (15). 93–102. Doi: https://doi.org/10.3916/C51-2017-09.

Thelwall, M. (2018). Social media analytics for YouTube comments: Potential and limitations. *International Journal of Social Research Methodology*, 21 (3), 303–316. Doi:10.1080/13645579.2017.1381821.

Tzifopoulos, M. (2021). Teachers talk about their experiences in using Digital Interactive Technologies in teaching: The “iceberg” of external and internal barriers. *Pedagogical Review Journal*, 71, 107–124.

Unesco, (2011). *Teachers' Curriculum Guid-Media and Information Literacy*. Retrieved on 12 January 2019 from URL: http://unesdoc.unesco.org/images/0019/001929/192971GRE.pdf.

Youngblood, N. E., Tirumala, L. N., & Galvez, R. A. (2018). Accessible media: The need to prepare students for creating accessible content. *Journalism & Mass Communication Educator*, 73 (3), 334–345. Doi: 10.1177/1077695817714379.

Yousef, A. M. F., Chatti, M. A., & Schroeder, U. (2014). The state of Video-based learning: A Review and Future Perspectives. *International Journal on Advances in Life Sciences*, 6 (3 and 4), 112–119.

Zhang, D., Zhou, L., Briggs, R.O., & Nunamaker Jr, J. (2006). Instructional video in e-learning: Assessing the impact of interactive video on learning effectiveness. *Information & Management*. 43 (1), 15–27. Doi: 10.1016/j.im.2005.01.004.

Zureick, A. H., Burk-Rafel, J., Purkiss, J. A., & Hortsch, M. (2018). The interrupted learner: How distractions during live and video lectures influence learning outcomes. *Anatomical Sciences Education*, 11(4), 366–376. Doi:10.1002/ase.1754.

Filippos Evangelou was born in Ioannina in 1978. He graduated from the Department of Primary Education at the University of Ioannina (2002) and the Department of Early Childhood Education at the University of Ioannina (2015). He did his postgraduate studies (2004) at the Department of Primary Education at the University of Ioannina and his doctoral studies (2012) at the Department of Primary Education at the University of Ioannina. Also, he did his postdoctoral studies (2022) at the Department of Philology at the University of Ioannina. Since 2020 he has taught at the Hellenic Open University (Greece, Patras) as a Tutor-Counselor

He participated in many conferences in Greece and abroad. His articles have been published in scientific journals in Greece and abroad. Three of his previous publications:

1) Evangelou, F. (2022). The contribution of microteaching in teaching practice: a research approach to Greek students, prospective teachers. *International Journal of Education and Research*, 10 (12), 53–68.
2) Evangelou, F. (2021). The aspects of Primary Education teachers in the Region of Epirus from the application of distance - modern and asynchronous – education in the period of Covid-19. *Open Education - The Journal for Open and Distance Education and Educational Technology*. 17(2), 23–40. Doi: https://doi.org/10.12681/jode.25427.
3) Evangelou, F**.** & Kotsis, K. (2019). Real vs Virtual Physics experiments: Comparison of learning outcomes among Fifth Grade Primary School students. A case on the concept of frictional force. *International Journal of Science Education*, 41 (3), 330–348. Doi: https://doi.org/10.1080/09500693.2018.1549760.

Dr. Evangelou is a regular member of the Pedagogical Society of Greece.