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English language learners' experiences of using interactive videos in EFL listening

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As blended and online courses are becoming more prevalent, there is need for research into how digital tools might help teachers increase learner motivation and engagement in online learning. This qualitative case study explores learners' perceptions of interactive videos, with a particular focus on perceived levels of learner motivation and engagement, along with the apparent value of the interactive elements in providing feedback and improving listening comprehension. The participants were 37 freshmen English as a Foreign Language (EFL) learners, majoring in English language teaching. The data were collected through semi-structured interviews with six participants and the learning analytics module of the interactive video software. The six interview participants, along with 31 others, also responded to reflective journal prompts. The participants reported that interactive videos provided them with meaningful input and timely feedback, and the perceived improvement in their listening skills motivated them. Most of the participants reported that they preferred interactive components for promoting higher engagement, but they also highlighted that having frequent interactive elements distracted them from the content.

Keywords: interactive videos, perceptions, listening comprehension, interactivity

Introduction

Video-based educational systems, particularly massive open online courses (MOOCs) have been augmented with interactive elements, which can turn traditional videos into interactive ones (Kazanidis et al., 2018). Interactive videos offer various benefits, including but not limited to embedded quizzes and annotations, monitoring students' responses and providing instant feedback, hyperlinks, and discussion questions (Bakla, 2017). These features could be

used not only for turning passive viewing into an active process (Blackstock et al., 2017; Chen, 2012; Cummins et al., 2015; K. Graham, 2016), but also for making interactive videos a potentially appropriate tool for formative assessment in language instruction (Kolås, 2015; Smithwick et al., 2018). Moreover, as Akram et al. (2023) stress, interactive lectures in the form of annotated (interactive) videos can increase user engagement.

Despite their pedagogical affordances, interactive videos are a less commonly used educational tool (Bakla, 2017). Moreover, there is a paucity of research on the effect of interactive videos in foreign language classes. More specifically, there have been no studies on the perceived value of interactive videos on foreign language learners' listening comprehension skills or motivation and on learner perceptions of interactive elements. Some studies on the pedagogical affordances of interactive videos do exist, yet they belong to other domains such as business (Mischel, 2018), math or science (Giannakos et al., 2015; Wachtler et al., 2016), engineering or computer related fields (Kleftodimos & Evangelidis, 2016; Vural, 2013), psychology (Lawson et al., 2006) or perception studies with participants from various backgrounds (Gedera & Zalipour, 2018; June et al., 2014; J. Kim et al., 2015; Zahn et al., 2004). In line with the gap in the literature, the present study investigates the use of an interactive video tool, and the purpose of this study is to explore EFL learners' perception of interactive videos and their key features (interactive elements).

Literature review

Listening skills

Although listening is a crucial skill to acquire a second language (L2) (Harputlu & Ceylan, 2014; Wallace, 2020), some scholars claim that research on listening as a skill and listening motivation is far scarcer than research on other skills (e.g., Tsang, 2022, 2023; Tsang et al., 2024). Listening as a skill is one of the two ways of providing students with input; the other being reading. Therefore, enhancing L2 learners' listening comprehension is one of the means of improving foreign language proficiency (Tsang, 2022). Research on the cognitive processes involved in language comprehension has led to a growing recognition of listening as a sophisticated and dynamic cognitive, psychosocial, and behavioral activity. To ensure its development, listening instruction should be more systematic and direct (Lau, 2016). Listening includes the interplay between bottom-up and top-down processes (H. Kim, 2015; Nunan, 1998; Rost, 1990), and L2 listening motivation is connected with both of these processes (Xu & Qiu, 2023).

Furthermore, metacognition is a crucial component of cognitive processes in listening. Effective listening may depend on listeners' awareness of and capacity for managing their own listening processes (Goh, 2008; Rahimi & Katal, 2012; Rahimirad, 2014) not only by using cognitive and metacognitive strategies (Lau, 2016) but also by being motivated to listen. Vandergrift (2004) grouped metacognitive strategies into planning, directed attention, monitoring, problem solving, selective attention, and evaluation which helped self-regulation.

Tsang (2022) attempted to delineate the interplay between listening motivation, self-confidence, interest, and overall foreign language proficiency. He found that listening motivation, interest, and self-confidence predicted proficiency.

Another critical construct that is suggested to boost learning and achievement in classroom contexts is self-regulated learning (Chon & Shin, 2019; Karlen, 2016; Pintrich & De Groot, 1990), which is defined by Zimmerman and Schunk (2011) as “processes whereby learners personally activate and sustain cognitions, affects, and behaviors that are systematically oriented toward the attainment of personal goals” (p. 1). Self-regulated learning (SRL) approach to L2 listening is regarded as salient to take into account in L2 listening since authentic listening activities promoting self-regulated listening help learners improve their metacognitive understanding and abilities for listening achievement (Zeng & Goh, 2018). The usefulness of SRL listening training as well as its impact on L2 listening motivation and strategy utilization were investigated in a quasi-experimental study carried out by Xu and Luo (2024) with 80 participants. While the control group ($N = 40$) received standard English listening training that focused on product, the experimental group ($N = 40$) received 17 weeks of SRL English as a second language listening training. At the beginning and end of the intervention program, each participant filled out surveys and took pre- and post-listening proficiency tests. The experimental group outperformed the control group in the post-listening proficiency test at statistically significant levels. Another study carried out by Yabukoshi (2021) made an effort to ascertain any possible relationships between language acquisition, self-efficacy, and self-regulation in the context of self-instructional learning. She found out that, in contrast to their peers with lower self-efficacy, the higher self-efficacy group demonstrated significant, diverse, and more self-regulated processes. Moreover, one self-efficacious student who showed more progress in his listening process used sophisticated metacognitive strategies throughout his self-regulated learning process, which is likely to support efficient self-regulatory cycles. Interactive videos, which is the topic discussed in the next section, might involve cognitive processes that are not present in traditional videos, and they might function as a tool for increasing motivation in listening comprehension.

Interactive videos in listening instruction

Videos could have a significant place in listening instruction, and according to Merkt and Schwan (2014), they will be commonplace in the future, due to increasing number of video-based learning platforms. Research on the use of video on learning has also bloomed. For example, an earlier review paper (Giannakos, 2013) included 166 studies on video-based learning carried out between 2000 and 2012. However, although technical characteristics of videos have dramatically improved, the role that learners assume while watching videos has remained almost the same (Wachtler et al., 2016). In other words, video watching by its nature is a passive activity (J. Kim et al., 2015; Kolås, 2015; Palaigeorgiou & Papadopoulou, 2019; Wachtler et al., 2016), and linear videos

do not allow students to interact with the content (Sauli et al., 2018). Therefore, despite the proliferation of educational videos in various platforms, they do not guarantee success in learning (Mullaney, 2015; Stigler et al., 2015). Unless video watching is embedded in active learning activities or videos are augmented with interactive elements, videos might not be as effective as expected. Moreover, it is normally difficult to monitor students' watching behaviour or determine whether they watch the assigned videos or not. There are also other problems associated with linear videos, such as the inability to do some activities while the video is in progress or being unable to receive information that could scaffold students in understanding the content during watching (such as vocabulary annotations or automatic replays). To address such problems, video-based educational systems, particularly MOOCs have been augmented with interactive elements (Kazanidis et al., 2018).

To remedy the passive viewing problem in traditional videos, interactive videos, also called “hypervideos”, are gaining popularity in online and distance learning. As Damasceno et al. (2020) state, they can easily be created as learning objects by teachers themselves thanks to the use of authoring tools. While initial interactive video tools were designed by individual researchers (J. Kim et al., 2015), today there are others by larger-scale businesses (for example: PlayPosit, EdPuzzle, HapYak, H5P, and so forth). Interactive videos offer various interactive elements such as embedded quiz questions and machine-grading of some of the responses. Different types of questions could be embedded in videos, and much better still, learners receive feedback for the questions in the embedded quizzes (Angelova et al., 2014; Baker, 2016; Bakla, 2017; Cummins et al., 2015; Klefodimos & Evangelidis, 2016). It is possible to include machine-gradable questions and to use learner responses to these questions as data for formative assessment.

Another key feature is “jump feedback,” which refers to an interactive video feature that rewinds the video when an incorrect answer is given to a (multiple-choice or true/false) question to help the student get the correct answer in real time. Interactive videos also provide “activity stream data” (Nyland, 2018; p. 4), such as viewing time, feedback from the system, and other data related to watching behaviour. Although some features of interactive videos might be present in traditional videos or in popular video platforms like YouTube, interactive videos offer additional capabilities for such features. For example, viewing time refers to the total amount of time spent by a student for viewing a particular video. For instance, if a student watched a video of two minutes in length twice, viewing time would be 10 minutes (as recorded in the interactive video platform); the teacher could also see the average time spent for a watching task. Such data could help the teacher monitor how much time each student (or the whole class) has spent for a particular viewing task. Similarly, the students' answers to the embedded questions can easily be tracked by the teacher as every answer is recorded on the platform, which helps the teacher determine if the class has learned the information presented in the video. Jump feedback helps provide learners with real-time information about their learning. This feature is not available in traditional videos or YouTube videos.

Besides embedded questions and feedback tools, most interactive video software makes it possible to add hyperlinks, annotations, and exchange options (comments) (Chambel et al., 2004). Some tools also offer interactive search and navigation in videos. Such control features enable learners to progress at their own rate, thereby individualizing learning. Students could also collaboratively respond to questions structured as an interactive discussion, which could promote critical thinking, socializing, and deeper involvement in the topic; the teacher could also participate in the discussions to encourage more comments from the learners and to enable them to feel his/her presence in the learning environment. These elements collaboratively aim to eliminate the problem of limited interactivity, lack of annotation, and adequate reflection in traditional videos (Chambel et al., 2004). Interactive videos come with additional affordances in terms of interactivity. For example, it is possible to pause the video and allow learners to reflect on the topic (usually by providing them with a prompt). Similarly, teachers could add various annotations that function as explanations, reminders, vocabulary notes, and so forth.

Studies on interactive videos

Studies on videos with embedded questions have produced relatively positive results. For example, Lawson et al. (2006) provided learners in the experimental group with embedded questions, and the results indicated that the learners who responded to video-embedded guiding questions outperformed those who only watched the videos in answering video related questions in the post test, yet there was not a difference between the groups in the textbook related questions. In a similar study, Tweis (2016) compared videos with embedded questions and linear videos in a study group of 60 graduate students in two groups. The results indicated that the learners who worked with interactive videos did better than those in the traditional video group. The researcher concluded that embedded questions boosted learners' self-efficacy and confidence. They also helped support learners' knowledge with new knowledge and improved their memory. Kolås (2015) investigated learner perceptions of embedded quizzes in a MOOC and found that interactive videos with embedded questions worked better for majority of the learners and made them active viewers. Vural (2013) compared videos with and without embedded questions in a computer literacy course in an experimental study with 318 participants. Vural found that the videos with quiz questions warranted better learning, and the learners were involved in more interaction and spared more time for the videos. In another study, Zou and Xie (2019) investigated the effectiveness of interactive videos produced in EdPuzzle. They found that just-in-time instruction coupled with EdPuzzle videos led to an increase in the participants' scores in writing reports. J. Kim et al. (2015) developed an interactive video tool Rich Interactive Multimedia Exercise System (RIMES) and evaluated it with 19 high school instructors and 25 learners. The teachers created exercises using the tool, and they found the process positive; they found the software enjoyable and easy-to-use. The exercises were qualitatively analysed, and it was found

that they necessitated cognitive processing rather than memorization. The students were also positive, and they found the interactivity highly useful. Finally, İpek et al. (2021) investigated teacher candidates' perceptions of peer learning through interactive videos in a blended learning environment. They found that most of the participants reported a positive experience about learning by using interactive videos.

There were also several other studies with some mixed results. For instance, Polat and Taslibeyaz (2023) compared interactive videos with traditional ones in a flipped foreign language class. They found that interactive videos helped improve the participants' learning performance and decreased their cognitive load. However, they had no impact on their engagement, long-term attention, positive emotion, and satisfaction with the interactive video-based flipped learning class. In a qualitative study, Bakla and Mehdiyev (2022) compared teacher-created interactive videos and YouTube videos. The participants enjoyed the YouTube videos more than the teacher created interactive videos, yet they found the latter more instructive, particularly because of the interactive components it included. Jacob and Centofanti (2023) investigated if interactive videos produced using H5P improved students' performance in a psychology course. There were no differences between the students who used H5P materials and those who did not, and interactive videos did not increase engagement levels. However, the students reported that they wanted to have more interactive elements in learning materials.

In short, interactive videos seem to have the potential to turn passive viewing into an active process and promote individualized instruction through instant feedback. Teachers can easily use the learner data collected through these tools for feedback and assessment (Stigler et al., 2015). Apparently, interactive videos offer a lot of pedagogical components that could facilitate feedback practices and increase learner engagement. According to Gedera and Zalipour (2018), interactive elements in videos enable learners to control their own learning and to learn more autonomously. However, it is essential that these pedagogical tools be integrated in language instruction, and researchers and teachers are to explore how learners perceive their use in listening classes. As interactive videos are an under-researched area and their use in EFL listening classes is an innovative issue, the researchers aimed to seek answers to the following research questions:

Q1. What is the perceived value of interactive videos in improving learners' listening comprehension and motivation to listen in English?

Q2. What do the participants think about interactive components in the interactive videos (i.e., discussion questions, quiz questions [true-false and multiple-choice], vocabulary guesswork questions, and writing sample sentences), and feedback elements (jump feedback, replays, and immediate feedback)?

Method

This qualitative case study investigates EFL learners' perceptions of interactive videos in a listening class enriched with computer-assisted learning activities.

This study adopted a case study method to gain a complete understanding of a specific phenomenon (Creswell, 2002). It aimed to deeply explore the learners' ideas and perceptions about using these tools for improving their listening comprehension skills. The learners took part in listening activities created using an interactive video tool (Zaption). The data were collected using semi-structured interviews, reflective journals, and the learner analytics module (the records of the participants' responses to the embedded questions and their viewing time etc. in the interactive video platform) to ensure methodological triangulation.

Participants

The study was conducted in a listening class at the English Language Teaching Department at a state-run university in Türkiye. The participants were 37 upper-intermediate freshmen students (30 females and 7 males). No English proficiency test was given to the participants before the study as they come to the department after they pass a proficiency test in which they are required to score at B2 level. The participants met once a week for three hours for the listening class which aimed to improve the learners' listening skills. All the participants wrote reflective journals (see Appendix C), and six of the participants participated in the semi-structured interviews. The participants were equipped with fundamental computer skills, and they were good at using the interactive video system and previously worked on Google Drive. Of the six students selected, two were males, and four were females in line with the distribution of the genders in the study group. In terms of their scores, three participants were extreme cases because two of these (Cavit and Faruk) were both higher scorers in all parameters, and their interactive video score was 100, while the third (Senem) was just the opposite with lower scores for all parameters; she also missed three sessions. The remaining three interview participants were typical cases with varying scores. This recruitment procedure was intended to ensure multivocality. We also considered who could potentially provide rich descriptions of their experience. We encouraged all the participants to keep reflective journals; we did not use any criteria to select reflective journal writers. Except for the two excluded students, all participants, including the six interview respondents, wrote reflective journals ([click here to see their characteristics and scores](#)).

The participants were grouped based on (a) the average scores they got in the interactive video, (b) their level of participation in the discussions embedded in the videos, (c) their level of interaction in the discussions embedded in the videos, and (d) the amount of time spent watching the videos and responding to the questions. First, the participants were ordered based on their interactive video score (calculated using the number of correct responses for the embedded questions in the videos) from highest to the lowest, and the upper half of them were considered higher scorers, while the lower half was considered lower scorers. Secondly, the level of interaction was calculated by counting the total number of words each participant contributed to the discussion

questions throughout the study. They sometimes responded to each other during the discussions; the number of words in such responses were counted to identify the level of interaction for each student. Then, the participants were ordered based on their interaction and participation scores. The same split-half method mentioned above was used to identify the participants with weaker versus stronger interaction and those with higher versus lower participation scores. The same method was used for grouping the participants based on the amount of time they spent watching the videos. Finally, the interview participants were selected from the groups formed for each parameter (i.e., higher versus lower/stronger versus weaker/more time spent versus less time spent). However, because there were five criteria (including gender), it was not possible to select participants equally distributed for all the criteria (see Table 1). The purpose of this procedure was to ensure that participants with different levels of performance participate in the semi-structured interviews.

Table 1. The participants' scores from the learning analytics module in the interactive video

Participants	Gender	Interactive video score	Level of interaction in the discussions	Level of participation in discussions	Time spent
Burcu	Female	Higher (HS)	Weaker (WI)	Higher (HP)	More
Cavit	Male	Higher (HS)	Stronger (SI)	Higher (HP)	More
Faruk	Male	Higher (HS)	Stronger (SI)	Higher (HP)	More
Beyza	Female	Lower (LS)	Weaker (WI)	Higher (HP)	Less
Alya	Female	Higher (HS)	None (NoI)	Higher (HP)	More
Senem	Female	Lower (LS)	Weaker (WI)	Lower (LP)	Less

Note. All the interview participants completed the 10 sessions, except for Senem, who participated in 4 intensive study sessions and 3 discussion sessions.

(a) The level of interaction: SI: Stronger interaction; WI: Weaker interaction; NoI: No Interaction

(b) The level of participatio: HP: Higher participation; LP: Lower participation

(c) Mean Interactive video score: HS: Higher mean interactive video score; LS: Lower mean interactive video score

Procedure

The first step was to select the interactive video software to be used in this study. We compared major alternatives with respect to the interactive elements they offered. This comparison revealed that Zaption, which is not available anymore, was more functional and offered more interactive elements and feedback tools (for a comparative overview of these tools, see Bakla, 2017).

The next step was to select short videos with topics that could arouse interest. For this purpose, five videos from YouTube with acceptable pace and moderate new vocabulary were selected for intensive study (see Appendix A). The researchers worked on each video and prepared listening comprehension activities that focused on major subskills of communicative listening (Weir, 1993, as cited in Buck, 2001), related to two major areas: (a) direct meaning comprehension (listening for gist, listening for main ideas/details, distinguishing main

ideas from details and examples and (b) inferred meaning comprehension (making inferences, relating utterances to their social and situational context, and vocabulary guesswork).

The students worked on each video for three hours in two weeks (1.5 + 1.5 hours). All the work was done during the class hours. The participants were asked to watch the video three times in the first week and once more in the second. Therefore, the researchers made sure that the videos were short to avoid boredom (see Figure 1).

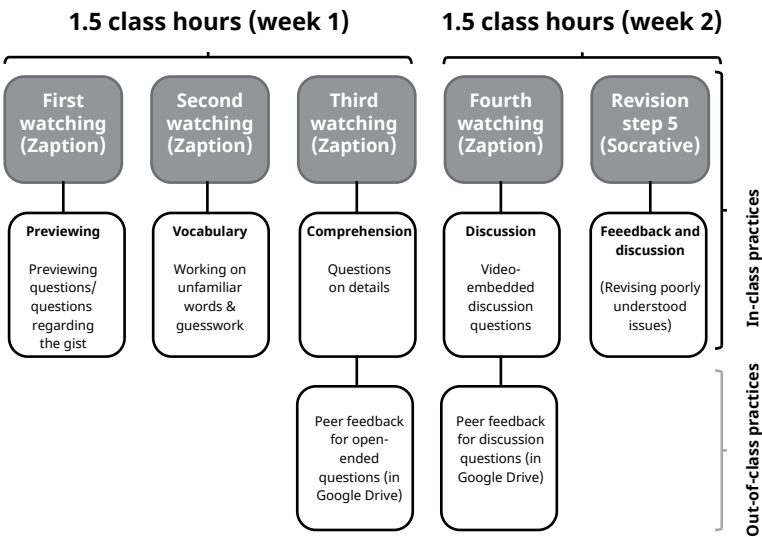
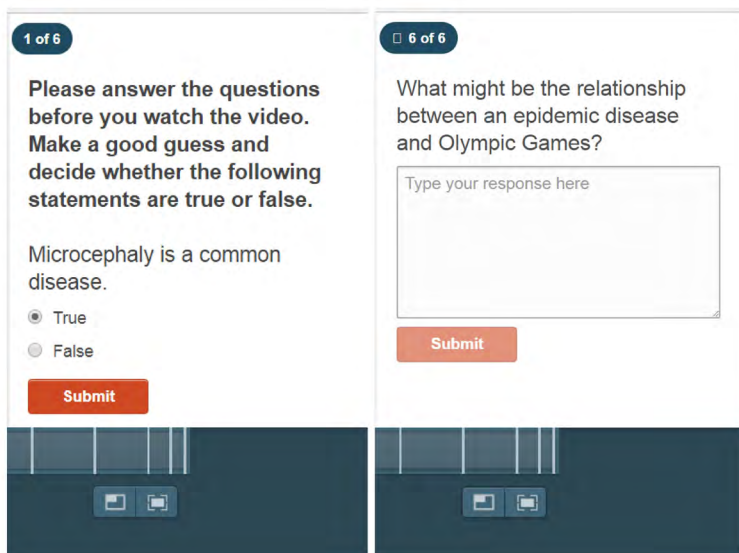


Figure 1. A sample video watching, discussion and revision cycle

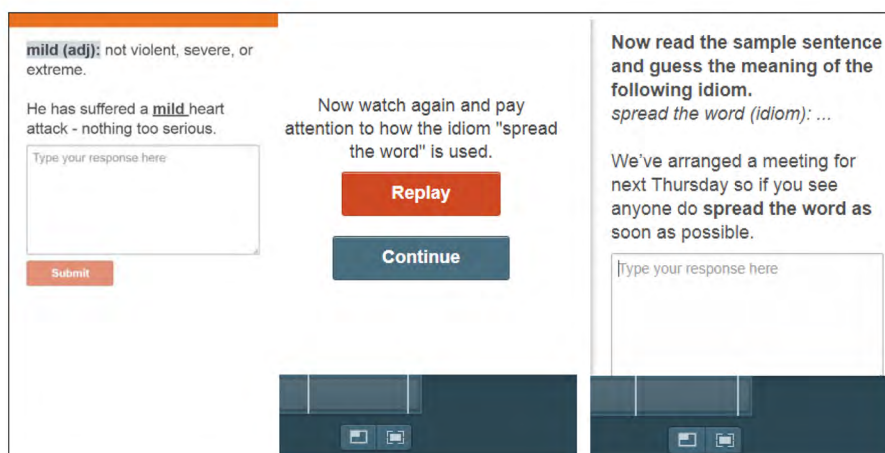
For each video, the participants answered previewing questions before watching the video, and they were asked to answer gist questions after the first viewing. There were several question types in the previewing and post-viewing sections (see Figure 2). The interactive components other than questions were hyperlinks, pictures (for vocabulary items), automatic replays of video sections, and text (definitions and sample sentences for target vocabulary).



Note. For both of these sample questions, the video stops, and the question appears on the right. The videos on the left were cropped from the screenshot for copyright considerations.

Figure 2. Sample previewing questions about Zika virus: true/false (left) and open-ended (right)

For the second viewing, learners worked on the vocabulary, guessing the meaning of one or two vocabulary items and writing their own sample sentences based on model sentences from two different contexts (one from the video itself) (see Figure 3). For the third viewing, the learners were asked to answer questions focusing on details, and they received detailed immediate feedback for these items as it was the case for the gist questions (see Figure 4).



Note. (1) At the beginning of the video the learners are given the following reminder: *In this video, read the definition and sample sentence for each word and write your own example sentence for it when you are asked to do so. There are eight words in total. You will write 4 sentences and a definition.*

Figure 3. Sample sentence writing activities (left) and a vocabulary guesswork activity supported by replaying and a sample sentence (middle and right).

5 of 8
04:14

Multiple Choice

What does he recommend to make other villagers safe?

☒ To inform others about cholera

Feedback: Splendid!

☐ To stay away from rivers

Feedback: Don't be so sure! The villagers rely on river water. How could they survive if they stayed away from rivers?

☐ To dig latrines close to rivers

Feedback: Don't be so sure! What are latrines? Check this word and you'll understand why this option is not correct.

☐ Not to visit people carrying cholera

Feedback: Don't be so sure! You know they have cure the disease.

Note. The question on the left is what the students saw. Depending on the option chosen, the corresponding feedback (right) is displayed.

Figure 4. A sample multiple-choice question and detailed feedback for each option in the video “Cholera, intensive study”

In the second week, the participants watched the video once again and participated in a discussion in a forum format (see Figure 5). The discussions were intended to help learners make meaning in a collaborative space.

1. Discussion: What can you do to help promote awareness about this virus? Discuss it with your friends.

Time	Replies
01:05	Didem We can inform public with tv programmes and broadcast advertisements on TV about this virus.
01:05	Aysel Is the virus common in our country...?
01:06	Faruk There can be seminars about zika virus. Instructor Seminars might work well. At the same time news programs about these seminars could be televised (I mean "shown on TV").
01:06	Zehra We can prepare some advertisements, news and brochures about this topic.
01:06	Aysel Maybe, seminars about zika might be organized. Bedirhan would you organized if anybody gave you responsibility about this case? Aylin For whom will be these seminars? Aysel Yes, of course Cihad, and you? Aysel For people who live in area with zika.

Note. One of the authors who was also the class teacher encouraged the learners to respond to each other and build a collaborative space for meaning making.

Figure 5. A sample discussion question and the participants’ responses to it

Data collection tools

As a key issue in case study research is collection of multiple forms of data, this study used various qualitative data collection tools to triangulate the data. The main data collection tool in this study was semi-structured interviews. In addition, the data were triangulated using reflective journals and data from the learner analytics module of the interactive video software. Detailed information about each of these tools is presented below.

Semi-structured interviews

Six participants took part in the semi-structured interviews conducted at the end of the instruction. No other interview participants were selected as the data from the interviews painted a detailed picture, and the reflective journal data and the data from the learner analytics module corroborated the interview data (data saturation). The interviews took 30 minutes on average. The interview protocol was prepared based on several sources of data: data from the literature, quantitative data obtained from reflective journal entries, data from informal talks with students, and insights from peer debriefing (see Appendix B). The interviews were carried out in Turkish to ensure that the participants could express themselves comfortably in their native language. The interviews were carried out by the second author to help the participants to express themselves freely and sincerely in an environment where their own instructor (the first author) was not present.

Reflective journals (RJ)

All the participants ($n = 37$) were asked to keep reflective journals about the experience of receiving feedback through an interactive video tool. They were asked to respond to the prompts provided at the end of some of the videos as open-ended questions. This allowed each participant to respond to the prompts immediately after the experience, thereby allowing them to reflect on their fresh experience. The researchers read the entries each week and revised the reflective journal prompts as needed (see Appendix C for sample prompts). No peers were able to see what the participant wrote in the reflective journal entries. The prompts and their responses were in Turkish.

Data from the Learner Analytics Module

As recommended by Edmonds and Kennedy (2017), some descriptive data from the interactive videos were used to provide context for the qualitative findings. The learner analytics module provided data about various parameters. For the purposes of the present study, the following data were used: (a) the number of videos watched by each participant and (b) a score (out of 100) for the machine-gradable items (i.e., true-false, multiple-choice). Moreover, the researchers also calculated the number comments/replies in the discussion sessions and the number of words written as comments/replies to comments by using the logs

of learner responses to discussion questions. The data from learning analytics module, besides guiding the qualitative sampling, also provided corroborative evidence for some of the qualitative findings.

Data analysis

The data obtained from the semi-structured interviews with six participants and reflective journals written by 37 participants were analysed using content analysis in NVivo v12. An inductive approach was used during coding; no preliminary codes were used. All the codes were created as the transcripts and reflective journal entries were read line by line. At initial phases of the analysis, the researchers examined all the transcripts to obtain an overall glimpse of the data. Quoted material from the interviews or reflective journals used in the study were translated, on a verbatim basis, by one of the researchers and revised by the other. The interview participants were also requested to read the interview transcripts and tell the researchers whether the transcription was accurate and whether there was something in the transcript that they wanted to change. This respondent validation ensured the accuracy of the transcripts. The findings were presented using thick description to enable the reader to get enough information about the context in which the study was carried out and the data collected in this context. The researchers considered disconfirming evidence whenever possible and revised the codes based on unfitting data. When they directly quoted sentences from the transcripts, they paid attention to the representativeness of these quotes. Another criterion for selecting quotes was to integrate multiple perspectives into the discussion; therefore, quotes were selected from both interview transcripts and reflective journal entries and from different participants. In addition, quotes were used to support both positive and negative cases. During data analysis, NVivo was also used to calculate the frequency of positive and negative words as a strategy for confirmation of the findings. The data saturation was also checked: the data from the interviews were enough to form most of the codes in the dataset; the data from the reflective journals and video analytics supported the data from the interviews.

Findings

The researchers analysed the data and produced four themes that provided answers to the two research questions. Each of these themes are presented below.

Theme 1. Discernible improvement as a stimulus for learning

A major theme was related to how the participants globally considered studying listening through interactive videos. The participants emphasised that the learning design characterised by the interactive videos functioned as a beneficial tool for learning: “We should have more of these videos and more listening” (Cavit-SI-HP-HS, interview, see Table 1 for the meaning of these abbreviations).

“In general, it was a beneficial activity” (Şeyma-None-LP-LS, RJ). “I think it was effective” (İlknur-WI-HP-HS, RJ). “It is a definitely instructive activity” (Ferah-SI-HP-HS, RJ). “It was an effective method, and ... I’m sure it will be more effective over time” (Faruk-SI-HP-HS, RJ). These short quotes captured the ideas of 12 other participants, who generously used positive adjectives to refer to the learning design and materials. More specifically, the data indicated that interactive videos provided the participants with opportunities for linguistic improvement. The participants recounted gradual improvement in their listening comprehension. “These activities contribute to us a lot, not only in terms of knowledge but also in terms of listening” (Cavit-SI-HP-HS, Int.). “I am able to understand what I listen to; I think I have improved. Thanks to these activities, studying has become pleasurable” (Handan-WI-LP-HS, RJ). “...I can understand speech better day after day” (Aycan-None-LP-LS, RJ).

The comments about perceived improvement were highly positive, so we used counting as a strategy for confirmation of the findings and for eliminating bias (as suggested by Miles et al., 2014). We prompted NVivo to identify 100 most frequent words in the code “honed listening skills” and found 40 instances of “good” or “better,” and 14 of these (Count = 12, reference = 14) were directly related to “better comprehension” through such expressions as “I understood better” or “my comprehension became better”. There were other positive adjectives, such as “effective” ($f = 18$), beneficial ($f = 18$), positive ($f = 10$), nice ($f = 8$), fruitful ($f = 5$); verbs, such as improved/improvement ($f = 14$) or grammatical components such as “thanks to” ($f = 8$). There were also adverbs that intensified the meanings of these adjectives, such as “really” and “certainly”. Such data showed that the quoted portions were highly representative of unquoted parts in this code.

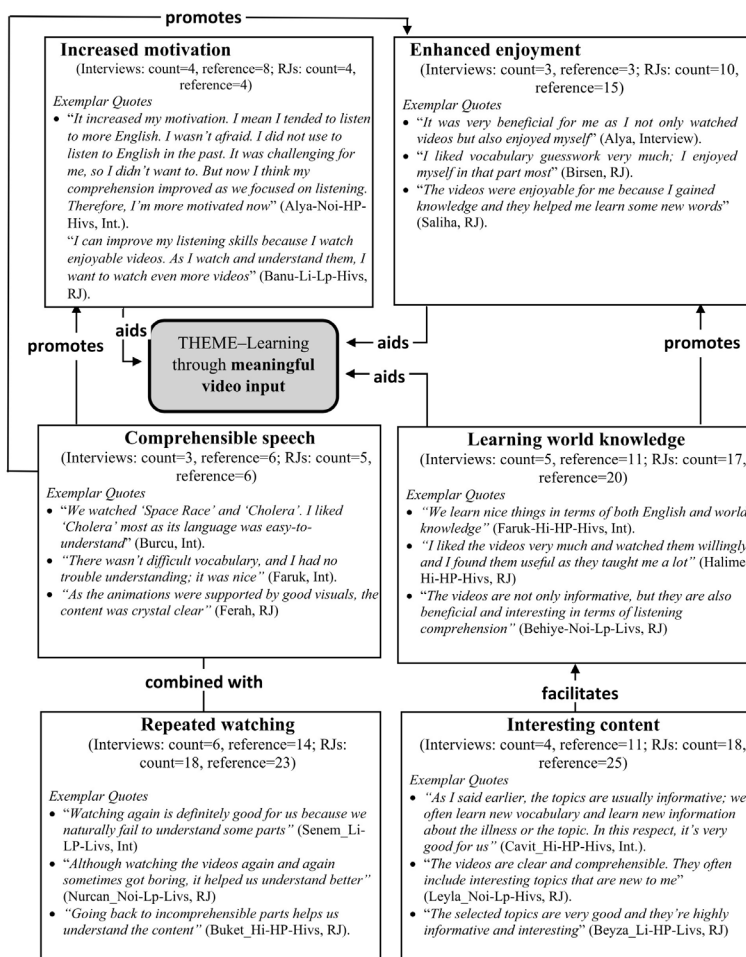
Besides the improvement in listening comprehension skills, four interview participants and five reflective journal writers (with 11 and six references, respectively) reported improvement in vocabulary knowledge as well. “We learned vocabulary and improved our listening skills” (Faruk-SI-HP-HS, Int.). “... these activities positively affect not only our listening skills but also vocabulary knowledge” (Aynur-None-HP-LS, RJ). “... useful in terms of listening, learning vocabulary, guessing meaning, and forming sentences” (Ferah-SI-HP-HS, RJ).

In response to the interview questions/reflective journal prompts about how these activities affected their motivation, four interview participants and four journal writers reported that their motivation to study listening increased. Additionally, the more improvement they recognized in their listening comprehension, the more motivated they felt. For example, one of the extreme cases with lower scores and interaction said, “Although I sometimes miss some parts, I can understand what I listen to, and this in turn increases my motivation to study” (Senem-WI-LP-LS, RJ). In short, discernible improvement in listening skills helped boost the learners’ affect (motivation and awareness).

Theme 2. Learning through meaningful video input

In general, five interviewees and 17 other participants in their reflective journals believed the content enhances their knowledge (see Figure 6). “It increases my world knowledge as well...For instance, our last topic was cholera and I learned about it. It’s lovely to learn something new” (Senem-WI-LP-LS, Int.). “... I improve my world knowledge” (Handan, RJ). “The contents of the videos are highly informative” (Bedirhan, RJ). They also made 31 positive references to this issue. Besides extending their knowledge, they believed the input was meaningful and enjoyable (see Figure 6). However, some participants reported that videos with a scientific topic and/or language could be less appealing and more difficult to understand: “It’s a very good activity in terms of gaining world knowledge, but it could have been more enjoyable if more pleasant topics had been introduced” (Birsen-None-HP-HS, RJ).

The participants had mixed feelings about rewatching the videos. Apart from increasing their motivation and helping them improve their vocabulary span, some thought, though useful, re-watching the videos can sometimes become boring. “... it gets rather boring to watch it again and again, but it is very good to go back if I haven’t understood it” (Alya-None-HP-HS, Int). Time was another concern: “If I fail to understand, I watch it again and again until I grasp it. This in turn leads to tremendous waste of time” (Alya-None-HP-HS, RJ). Similarly, Ferah thought that repeated listening was too much of a good thing. “There happens to be points I have hard time understanding, so I have to go back and so I extend watching time” (Ferah-SI-HP-HS, RJ). Another participant raised distraction as an issue, “When we watch the videos again and again, I get distracted due to the feeling that I have already had enough of it” (Cemil-WI-HP-HS, RJ).



Notes. (1) The arrows among the boxes indicate relationships between different codes from the perspective of the participants. To understand this figure better, please read the title of a box followed by the label on the arrow and the title of the connected box. e.g., Interesting content facilitates learning world knowledge. (2) To form this figure, the researchers created some relationship nodes in NVivo and coded data segments to these relationship codes to accumulate data that justify/verify the relationships. Multivocality was ensured while selecting the quotes.

Figure 6. The relationships among the codes related to "learning through meaningful video input"

Theme 3. Propensity for interactivity supporting higher levels of engagement

Some of the interactive components entailed a higher level of engagement (i.e., discussion questions and vocabulary guesswork activities), while others necessitated less of it (true-false or multiple-choice questions). The participants' opinion about these different activities were sought and they generally thought that both discussion questions and the vocabulary guesswork activities were highly beneficial for their improvement. A pattern code that the researchers created was that they considered discussion questions as a tool for thinking and even social interaction: "Thanks to the discussion questions, an atmosphere of discussion with peers is formed and we can then express ourselves better"

(Velican, None-LP-HS, RJ). “Globally considered, I really liked the discussion questions.... we discuss issues with the instructor; a congenial atmosphere among the respondents is created” (Faruk-SI-HP-HS, Int). Even participants with lower scores voiced similar opinions. For example, Burcu mentioned the flexibility offered by the discussion questions: “Discussion questions did not constrain us; we could make personal comments or provide our own examples” (Burcu, WI-HP-HS, Int) (see Table 2).

Table 2. A comparison of the participants’ perspectives about the code “discussion questions as a tool for thinking” based on three attribute values

	Discussion questions as a tool for thinking		
	Positive (+)	Negative (-)	Notes
Participants with the attribute value: Higher (for all three attributes)	“We communicate with our friends, and everyone writes their opinions. We respond to them. We can easily express our opinions interactively” (Cavit-SI-HP-HS, RJ). “Seeing my friends’ responses and being able to discuss with them make the activity more interesting” (Faruk-SI-HP-HS, RJ).	No comments	-
Participants with both Higher and Lower attribute values	“Discussion questions encourage us to think and do research” (Didem-SI-LP-HS, RJ) “They help us improve our ability to make comments and think harder” (Banu-WI-LP-HS, RJ).	“The questions were nice; I only had trouble responding to discussion questions, probably because I don’t know how to make comments” (Handan-Reflective-WI-LP-HS). “I sometimes can’t be creative in discussion questions and get distracted” (Beyza-WI-HP-LS, RJ)	Negative case analysis of this finding show that some learners loved true-false or multiple-choice questions as it was painless to answer them.
Participants with the attribute value: Lower (for all three attributes)	“I think that comment questions are beneficial in the sense of thinking and production” (Mert-None-LP-LS, RJ).	“I like multiple-choice and true-false questions more than the rest because others are a little challenging and time-consuming... I’m not particularly fond of discussion questions” (Senem-WI-LP-LS, Int) “I feel that I had trouble responding to discussion questions in this session” (Aycan-None-LP-LS, RJ).	On the one hand, what Senem said belonged to a negative case with respect to overall attitude towards discussion questions. On the other hand, it supported other participants in terms of discussion questions’ functioning as a tool for thinking.

(b) The level of participation; HP: Higher participation; LP: Lower participation
 (c) Mean Interactive video score; HS: Higher mean interactive video score; LS: Lower mean interactive video score
 RJ: reflective journal, Int: interview

Notes. (1) The attribute values in (a) and (b) represent the participants' level of participation in the discussion questions and their interaction with their peers while responding to them, and the mean interactive video score was calculated for three of the videos.

Mentioning the positive sides of the discussion questions, the participants found such questions challenging: "In general, I have had hard time responding to discussion questions" (Handan, WI-LP-HS, RJ). "... commenting and discussion were somewhat challenging for me, but I think they are essential" (Mert-None-LP-LS, RJ), which can be partly attributed to their exposure to recognition types of questions in most of their language courses rather than open-ended or productive ones.

Regarding interaction, only three out of 37 participants (Cavit, Faruk and Beyza) highlighted the potential for interaction as an important affordance of discussion questions. As anticipated, two of these had the highest interaction and participation rates in the whole study group. Cavit considered discussion questions as a tool for communication with their peers, and Faruk supported this both in the interview and his reflective journal entries (see Table 2). Beyza, a lower-interaction participant, voiced similar opinions, while the rest seemed to have overlooked the potential for interpersonal communication.

Conversely, a participant complained about low level of interaction: "A climate of discussion is not created in comment questions as everyone just writes their opinion and leaves" (İlknur-WI-HP-HS, RJ), and another no-interaction participant provided some hints about possible reasons for this: "When we watch the videos, we immediately write our comment and move to the next part in the video; we do this without being a part of the discussion and without seeing our friends' comments" (Birsen-None-HP-HS, RJ). Another participant expressed his dissatisfaction about the limited time: "As the video continues after the comments; I feel I hardly have time to read our friends' comments" (Cemil-WI-HP-HS, RJ).

Reflective journals provided deeper insight into what discussion questions meant for them, and how the levels of participation and interaction could be boosted. One suggestion was having interesting discussion topics: "If the topics are interesting and the questions are open to interpretation, there will be enough discussions" (Didem-SI-LP-HS, RJ). "... scientific language and terminology make commenting difficult" (Aynur-None-HP-LS, RJ), and another about simpler topics: "Commenting would be easier if the questions were not so demanding ..., such as "zika virus" (Zerrin-WI-LP-HS, RJ). Yet, another suggested that discussion questions should not require much prior knowledge, "it could be very nice if questions lent themselves to commenting here and now" (Selime-None-LP-HS, RJ). Additionally, some expressed dissatisfaction about lack of feedback on their comments: "... I can't see the evaluation of the comments in them" (Aysel-SI-HP-LS, RJ). "We have to know the answers to the

comment questions or what kind of comments can be made because we make the comment yet do not know if it is true or not” (Buket-SI-HP-HS, RJ).

Vocabulary guesswork and sample sentence writing were the other interactive components that entailed deeper involvement. A major conclusion the researchers drew was that the participants had difficulty in completing vocabulary activities because they found them intellectually demanding, although they considered them essential for their development. “Vocabulary guesswork sometimes gets challenging, yet I believe that it’s an important type of question” (Aysel-SI-HP-LS, RJ). “Vocabulary guesswork activities make us think hard; this is something good and beneficial for me” (Velican-None-LP-HS, RJ). “Vocabulary guesswork was an activity that not only encouraged me to think but also helped me learn” (Nurcan-None-LP-LS, RJ).

A relatively significant finding was that although the participants liked vocabulary guesswork and writing sample sentences, they found such activities too frequent, hence boring and distracting. “Concentration problems are highly likely, particularly when a lot of questions are asked in a short while” (Cemil-WI-HP-HS, RJ). “Questions are useful, but we get bored when they are too many” (Banu-WI-LP-HS, RJ). “The activity was enjoyable, nice and useful, but ... it must have tired my brain out because later I had hard time responding to some of the questions” (Ayten-WI-HP-LS, RJ). Probably because of such difficulties, a few participants confessed that they used a dictionary instead of doing the guesswork. Similarly, a small number of negative cases preferred short-answer or multiple-choice questions: “It was easier to answer factual questions rather than comment questions” (Nurcan-None-LP-LS).

Theme 4. Interactive components for timely feedback

The participants reported that two of the interactive components (i.e., immediate feedback for quiz questions and jump feedback for incorrect responses) were highly influential in providing feedback to learners. However, some of the participants complained that the frequent appearance of interactive components (jump feedback, replays, immediate feedback) distracted them as well.

In response to a question about the possible negative impacts of receiving immediate feedback, the participants predominantly reported its positive sides. Some participants thought that immediate feedback provided them a clue about their comprehension levels. “We could see the incorrect answers... I was able to see if I understood. So, it was cool” (Burcu-WI-HP-HS, Int). “Seeing the answers to the questions immediately was not a bad thing because as the number of correct answers increases, we get more motivated” (Zehra-WI-LP-HS, RJ). Also, positive immediate feedback encouraged them to watch other videos more willingly. “I feel happy. I get pleasure when I understand the video and become motivated to watch more” (Beyza-WI-HP-LS, Int).

Such comments highlighted an affective benefit of immediate positive feedback, yet they also raised the question of how negative feedback had been perceived. Using an if-then tactic, the researchers examined the data to find some information about this as there was a high possibility of demotivation when

they provided wrong answers and received frequent negative feedback. For instance, Behiye provided an answer for this question: “Seeing the answers to the questions immediately led to uneasiness as incorrect answers broke my concentration” (Behiye-None-LP-LS, RJ).

Another interactive component was “jump feedback”, which was widely discussed in the interviews, and regardless of their attributes, the interviewees considered jump feedback as a valuable tool. Cavit, a higher-scorer, emphasised the time-saving function of jump feedback: “You don’t have to watch the video from beginning to end once again. I mean going directly back to the related point is a good practice” (Cavit-SI-HP-HS, Int). Another high-scorer said similar things: “Watching only the related part, ..., does not bother us and is useful, therefore” (Faruk-SI-HP-HS). Lower scorers said similar things: “When we provide an incorrect answer, ... we can watch the related section again. I think this is very effective” (Senem-WI-LP-LS, Int). The issue of jump feedback was rarely mentioned by reflective journal writers; only three mentioned it. They found this tool useful: “For better comprehension, it is good to be directed to the point where we can see the answer” (Aynur-None-HP-LS, RJ). “Going back to incomprehensible parts helps us understand the topic” (Buket-SI-HP-HS, RJ).

Discussion

The first research question investigated the perceived value of interactive videos in improving learners’ listening comprehension and motivation to listen in English. Globally considered, the data indicated that interactive videos kept learners engaged, which lent support to Akram et al. (2023). Moreover, watching interactive videos with embedded components not only increased their motivation but also improved their performance. Such results lent support to other researchers’ findings (Kolås, 2015; Smithwick et al., 2018), who noted that embedded quizzes facilitate formative assessment and increase learner engagement. Gikandi et al. (2011) suggest that interactive videos functioned as a direct agent that provided timely feedback. Such feedback, as the participants reported, was provided throughout the study. Taken together, the participants were fond of watching interactive videos and receiving feedback as the videos enabled them to have an augmented video viewing experience.

The interactive videos helped the participants hone their listening skills. Metaphorically speaking, they helped the participants move up the listening comprehension ladder. This interpretatively constructed metaphor seems to capture the perceived gradual improvement in the participants’ listening comprehension skills. Moreover, the participants’ perception that their listening comprehension skills are flourishing motivated them to watch the videos, thereby increasing their self-efficacy in language learning (see S. Graham, 2022), and Yabukoshi (2021) suggests that this increase in self-efficacy can support self-regulated learning which is critical in listening instruction as it boosts learning and achievement (Chon & Shin, 2019; Karlen, 2016; Pintrich & De Groot, 1990). They felt that they can cope with the challenges of improving their listening skills.

A major finding was that the participants highlighted the role of “comprehensible input,” which is defined as content that learners can comprehend (Krashen, 1985, p. 101), in increasing their motivation to listen. The input was also meaningful not only because the participants enjoyed themselves while learning but also because they felt that they gained fresh knowledge. Several key codes under the theme “Learning through meaningful video input” established a network of related concepts, which collectively indicated how the interactive videos motivated the participants as they enabled them to learn through meaningful input and to enjoy what they did. The participants reported that they felt motivated to watch the videos because (a) they consumed comprehensible video content and (b) watched the videos multiple times, which in turn helped them feel more motivated. Their learning was meaningful because they were exposed to interesting content, thereby increasing their world knowledge (see Figure 6).

Although better comprehension made the activity highly enjoyable, some participants found repeated watching sometimes boring, but even some of those who reported boredom appreciated its value. Comprehensible content and repeated watching gave them the feeling that they could understand the content well. Some participants who reported an earlier feeling of hopelessness about their listening skills mentioned a perceived development. This can be attributed to the instructional design that gave the learners the feeling that they could improve their listening comprehension, encouraged further listening, and provided an enjoyable learning experience.

As discussed in some other studies (e.g., Kruk, 2014), apparently innovative CALL materials might lead to a disproportionately positive value placed on the learning experience. Such positive perspectives might be temporary and misleading. Therefore, we investigated the traces of possible innovation effect in the data, due to the highly positive value placed on the interactive videos and the interactive components. We looked for data verifying this but were able to find little support for this possibility. Instead, the participants usually reported that they were bored, or they had difficulty at the initial phases, but they later found the videos and interactive components highly useful. “I was terribly bored and had a bumpy ride, but I felt better as the activities were interesting” (Alya, None-HP-HS, RJ). “Watching the videos again and again was boring at first, but I later recognized that embedded questions, vocabulary activities and the revision of details were highly useful” (Ayten-WI-HP-LS, RJ). Three other participants expressed similar opinions. Based on such data, we concluded that the contribution of a possible innovation effect might have been minimal. If innovation effect had been at work, the learners could have got bored much earlier during the process; they found the instructional activities much better at later stages (but not initially).

It should be noted that this conclusion was in line with the results of earlier studies in other domains, which produced very positive results (J. Kim et al., 2015; Lawson et al., 2006; Tweissi, 2016; Vural, 2013). Similarly, in 13 of the 17 studies that compared hypervideos with other learning conditions in Sauli et

al.'s (2018) study, interactive videos were found superior to traditional videos, and they were found to be equally effective in the rest.

The second research question investigated what the participants thought about interactive components in the videos (i.e., discussion questions, quiz questions, vocabulary guesswork questions, and writing sample sentences). The data indicated that interactive components were found highly useful in general, but their (perceived) value might differ based on what and how frequently interactive components are used. The most striking result to emerge from the data is that the interactive elements could be successfully used to augment videos, yet they should not be used too often in order not to distract the participants from the content. This is because there is the danger that hyper-videos with frequent interactive components could lead to a kind of “Christmas tree effect”, a cybernetics term which refers to “a confusing effect on perception of numerous and simultaneous stimuli, specially visual” (François, 2004, p. 87) and create information overload, particularly for digitally less competent participants.

An important finding was that the participants liked the discussion questions, yet they were not able to make the most out of them. That is, the participants considered discussion questions as a tool for thinking and providing their perspectives and found them flexible. On the other hand, except for a few, they were unaware of their potential for interpersonal communication. That is, the interpersonal interactivity in discussion questions was weak (see Figure 5). The participants only responded to the questions; except for a few higher-interaction participants, they rarely interacted with their peers or the instructor. This meant that although discussion questions could have functioned as a shared space for joint meaning making and a device for collaborative synthesis and evaluation of the information from the video, the participants mostly missed this opportunity. In general, the participants were hardly socially present (low social presence). It should be noted that interaction with peers entailed deeper involvement. Part of the problem comes from the perspective that the discussion questions were already intellectually demanding, and higher levels of peer interaction would have made the activity even more demanding.

A related finding was that long-standing assessment-related ethos (i.e., Turkish-L1 learners' tendency to seek correct answers rather than offer personal perspectives has always been a norm) had a deep impact on how the learners considered the discussion questions. Several participants said that they needed to know the answers to the discussion questions, while others claimed some discussion questions hardly lend themselves to commenting. Both these complaints are context dependent as students expect to get the ‘correct’ answer. A few of the participants even indicated that they wanted to see the evaluation of the comments; they were always looking for rights and wrongs. In short, they were not aware of interaction although in some questions they were specifically instructed to respond to their friends' comments. This was almost the same for most participants regardless of their interaction and participation tendencies. Such contextual information could at least partially account for lower interaction. Topic familiarity was also mentioned

as participants noted that discussion questions must be more generic (rather than seeking information about specific things in the video) and they should be appropriate for commenting.

Another interactive component was vocabulary activities. In general, the participants liked them but found them too frequent. Moreover, the perceived vocabulary gains were relatively high. However, at the same time, they thought they were intellectually demanding. The activities (guessing meaning, writing definitions, and sample sentences, seeing the word in the context through the “replay” function) entailed harder thinking and production and therefore higher level of engagement. The positive opinions and perceived higher vocabulary gains could be explained by the levels of processing model, introduced by Craik and Lockhart (1972), which posits that deeper levels of engagement and analysis could facilitate remembering. The activities in this study ensured deeper involvement in the task. A few participants clearly stated that they liked multiple-choice and true-false items on the grounds that they were cognitively less demanding.

The third question investigated the participants’ perception of the feedback provided in the interactive videos. The data indicated that the participants considered immediate feedback, jump feedback and replays highly useful. A few participants stressed the time-saving function of jump feedback. The participants valued their interactive elements as they provided them with just-in-time feedback. However, the data indicated that negative feedback given to incorrect answers, particularly when the participant answers too many questions incorrectly, could discourage them from watching the videos. Therefore, inserting easier questions could work better when the intention is to keep learners active and to make sure they are watching the videos.

Pedagogical implications

The participants tended to like interactive elements that promoted higher engagement, yet most of them had difficulty in completing the tasks required by these elements. This finding globally suggests that carefully crafted lessons with interactive videos can motivate learners to study listening. As Damasceno et al. (2020) state, interactive videos could easily be prepared by teachers, yet there seems to be various issues to consider when producing interactive videos, such as the content and its presentation in videos, the type and frequency of interactive components, comprehensibility of the speech, and so forth. Teachers must consider these issues critically based on the characteristics of their participants.

Based on the participants’ comments, it was clear that the frequency of interactive components is rather critical as it has a huge impact on the pedagogical value of an interactive video. For example, having too many factual questions that frequently disturb the flow of watching might prove more harmful than beneficial. Therefore, the number of repetitions and embedded interactive questions or other elements should be enough in quantity to improve comprehension but not too many to avoid possible boredom. In the current

study, several times of listening not only aimed to help learners understand the listening passage better, but also enabled the interactive components to be dispersed across the listening sessions to provide fewer components in each watching.

Several improvements could be made in the interactive components. For example, learners believe jump feedback is a useful interactive component, but it might cause boredom when participants are taken back to an earlier point in the video just to learn a minor point. Having to watch the previously well-understood portions again could be boring for participants. Therefore, benefits of the jump feedback component could be guaranteed if this interactive tool comes with an option like “Go to my latest watching point in the video” (at participants’ disposal) after the learner watches and learns the correct information rather than watch the video once again all their way to the latest point they originally arrived before being sent backwards by jump feedback. Another improvement relates to “discussion questions”. More information and more input are essential for comment questions. Students could be provided enough input before they respond to discussion questions.

Video length could be an important criterion while selecting listening materials. This is particularly because the learners reported that they got bored when the video was longer and less comprehensible. Interactive components and possible repetitions make video viewing much longer than usual. This could imply that repetition in easier videos or with more advanced learners could be problematic. Therefore, the number of global/partial repetitions could be determined based on the level of the video and learners. Interactive videos offer advanced navigation functions in the video player. The number of the functions that will be provided to the learners is another issue to be considered when determining how much repetition is needed. Controlling navigation and the number of repetitions too strictly could prove counterproductive as some participants noted that they got bored watching the video more than two or three times, especially when the content was clear for them.

The topics of videos should be selected carefully; however, there will always be individual preferences, so it might be difficult to find topics that appeal to everyone. One option could be to ask learners to select their own videos and then interactive videos could be created by using these videos. As the participants reported, scientific passages could be problematic. Selecting everyday topics could be of critical importance for maintaining motivation and ensuring sustainability.

The cognitively less demanding interactive components could be used to motivate the learner to watch more videos. However, as the data indicated, too much negative feedback could be counterproductive. Therefore, there should not be very difficult questions that test listening comprehension; questions should be used as a tool for motivating participants. In this sense, easier questions are recommended, so that an average listener could answer most of them correctly upon completing the video. Easier questions could be asked at initial portions of the easier videos. If the participants are not accustomed to thinking and producing, then the number of interactive components intended

for deeper involvement (through higher-end cognitive skills) could initially be kept at a minimal level and be increased over time as learners get used to such activities.

Limitations and further research

One of the limitations of the present study is that the interactive video tool which formed a significant part of the in-class work (Zaption) shut down after the study was carried out. However, new interactive video tools are being introduced into the market each day and already-existing tools are flourishing. Therefore, it is possible for educators to find equivalent free or commercial software with almost the same set of tools (e.g., Playposit or Edpuzzle). The software program used in the study is just one of the many interactive video software programs currently used in commerce and education. All key features of Zaption, such as open-ended/multiple-choice questions, discussion questions, gap-filling questions, hyperlinks, and text overlay are available in current interactive video tools as well. Moreover, interactive video tools are being used in online learning platforms and MOOCs more and more frequently. A possible future development is the fully automated evaluation of student answers to open-ended questions. Such automated evaluation tools are already used today in second language writing. Given the recent developments in artificial intelligence, efficient and accurate automated evaluation can be a part of interactive videos very soon.

Based on the data from the present study, interactive videos seem to offer some useful components for better learning; they seem far from featuring seemingly attractive but instructionally worthless digital fads. Therefore, further quantitative, qualitative, and mixed-methods research could help to better explore and understand their instructional use. Future research could compare the impact of videos with and without interactive elements on listening comprehension, vocabulary uptake and content recall. Based on the comments from the participants, it was found that the frequency and placement of interactive components (e.g., questions or jump feedback) are important. Therefore, an essential topic of further research is how frequently and at what points interactive elements could be inserted in videos. The interactive video tool used in this study did not have “video chapter” or chapter navigation. Future studies could also include this interactivity and explore its use and impact on learning. Moreover, as the interpersonal interaction in the discussion questions was low, future studies could help us understand the factors that affect it.

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Appendix A

Descriptive information about the interactive videos

Video	# of times the video viewed	Length (minutes)
Who Won the Space Race? (Intensive study)	3	19:07
Who Won the Space Race? (Discussion)	1	04:47
Zika Virus (Intensive study)	3	06:05
Zika Virus (Discussion)	1	02:02
Cholera (Intensive study)	3	13:25
Cholera (Discussion)	1	04:28
Accident (Intensive study)	3	02:57
Accident (Discussion)	1	00:59
Thailand (Intensive study)	3	03:37
Thailand (Discussion)	1	01:11
Total	20	59

Note. Intensive study session included preview questions, while-viewing and post viewing questions, while discussion session included discussion questions and reflective journal prompts.

Appendix B

The questions in the semi-structured interview protocol

1. What do you think about the length of the videos?
2. What do you think about the topics presented in the videos?
3. How did you feel when you watched the videos multiple times?
4. What was the impact of multiple watching of the videos on your listening comprehension?
5. What you think about seeing the answers to the quiz questions as soon as you responded to them?
6. What you think about being automatically taken to the related part of the video when you provided an incorrect answer to a quiz question?
 - a. How did this affect your motivation and listening comprehension?
7. Which question types (i.e., interactive elements) did you like best (open-ended questions, true/false questions, multiple-choice questions and discussion questions) in the interactive videos?

- a. Could you please evaluate them with respect to feedback?
8. What do you think about the discussion questions?
9. What do you think about the vocabulary activity in the interactive videos in which you wrote your own sentence by examining the sample sentence already provided?
10. What do you think about the vocabulary guesswork activity in the videos?
11. What were the problems that you experienced throughout this learning experience and how did you solve them?
12. Could you please evaluate this learning experience with respect to listening comprehension in an overall sense?

Appendix C

Reflective journal prompts

1. How did these listening activities affect your motivation to improve your listening comprehension skills and your future plans for studying listening?
2. Please compare traditional listening activities and the activities that you did in this class with respect to feedback. What are the similarities and differences?
3. How did the activities affect your global attitude towards learning listening comprehension?
4. How did you feel when you answered questions incorrectly in the interactive videos?
5. To what extent the feedback that you received during/after listening informed you about your current level of listening comprehension?