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Optimal Video Length Effect on Flow Experience and Perceived Learning: A Repeated Measure Experimental Design with Randomization

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Videos are commonly used in education. Benefitting from instructional videos in learning processes empowers students' academic outcomes. In spite of this, educators have no consensus on optimal video length. There is a need to cease speculations on optimal video length since most of them have been relying only on context-based tips or best practices. Therefore, the purpose of this study is to delve into the optimal video length discussion through the lens of perceived learning and flow experience. We employed repeated measure experimental design with randomization of treatment order for each participant. Twenty-eight university students from two big cities in Türkiye volunteered to participate in the study. Short, medium, and long videos were compared via Friedman test. Results of this study substantiated instructional video length does not seem to affect students' perceived learning and their overall flow experience. However, they tend to concentrate and focus better on short videos. We call for an end to optimal video length discussion for videos shorter than 10 minutes, especially in terms of learning. The implications relying on the findings were discussed in terms of differences between "thinking to be in flow" and "being actually in flow." The recommendations are given in detail in the full text.

Introduction

Videos are replacing classical mediums such as printed and digital texts. This heralds the fact that people prefer information in videos to digital texts. Likewise, Long et al. (2016) reported that more than three quarters of students prefer watching course videos to reading material before attending class. What is the reason behind this preference? Because we can reduce the long reading time to a few minutes. Besides, they appeal to our different senses with visual materials. In the human mind, visual and auditory clues are processed through distinct channels as per Dual-Coding Theory (Clark & Paivio, 1991; Paivio, 1986). This way, we have two different ways of going to the same destination.

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Videos have become attractive in education, as well. Video usage in fully online or blended learning environments has become very popular in higher education, especially in flipped learning (e.g., Birgili & Demir, 2022; Djamaâ, 2020; Gaughan et al., 2014; Lai & Hwang, 2016; Liao & Wu, 2023; Shaw & Patra, 2022). Research evidence highlights that instructional videos are significant for the quality of learning process that they appeal to learners' both affective and cognitive attitudes (Chen et al., 2021; Giannakos et al., 2016; Merkt et al., 2022; Shoufan, 2019; Tiernan & Farren, 2017). Instructional videos offer various design possibilities in order to create an interesting and appealing learning environment (e.g., Beege et al., 2018, 2020). Teachers use instructional videos in gaining attention for their lesson (Gagne, 1988; Gagne et al., 1992; Surrency & Barbie, 2018) or as an introduction in daily teaching sessions (Beege et al., 2018). Notwithstanding such affordances of videos, are we really intrinsically motivated to watch them?

Optimal video length for optimal flow experience and learning

Two different phenomena appear to be at work when it comes to the video length. On one hand, we might watch a three-hour movie despite getting bored of a minute-short video. This is highly related to a couple of things such as "who is watching?" and "what is being watched?" However, we can easily explain this phenomenon with Flow Theory of Csikszentmihalyi (1975) since, according to the theory, the former must have somehow stimulated optimal flow experience. The flow theory was introduced in the 1970s by a pioneer psychologist Mihaly Csikszentmihalyi by tapping into his research that examined the one who did activities for pleasure, even when they were not given a reward. To define, flow experience is the mental state of concentration and engagement on the task that can be achieved when completing the task that challenges one's skills (Csikszentmihalyi, 1975). Flow experience keeps us going through components of flow (Csikszentmihalyi, 1988). On the other hand, we are trying to filter out distractions arising from the rapidly changing and ubiquitous technology; hence, it might be more effective to package information more concisely to be able to convey the meaning precisely. Even digital natives (i.e., Z generation, millennials) cannot evade from the notion that "it's too long and time-consuming" (Qin & Tan, 2020) right before watching an instructional video. However, watching is a precursor of engagement and, more importantly, learning. When taken together, flow experience appears to be a significant variable for reconciliation of these two phenomena since an individual's energy is absorbed into the task at hand, video watching in this case, during flow experience. As a consequence of this, it is known in the literature that flow experience and learning are highly positively related (Rossin et al., 2009), it positively impacts perceived learning (Buil et al., 2019), and flow experience positively predicts exam performance (Schüler, 2008). However, to the best of our knowledge, the sole academic endeavor articulating the relationship between videos and flow experience was undertaken by Wang et al. (2020) whose aim was not to pinpoint optimal video length. Overall, optimal video length for optimal flow experience and learning has yet to be determined.

In pursuit of optimal video length

In spite of the fact that videos are appealing to always-busy individuals of the modern world because of their straightforward benefits in rapid-digestion of information, they, themselves, are victims of always-busy ones: They have to be a lot shorter. Hence, video length does matter. As a superstition, the longer a video length is, the more it is assumed to tell. In reality, long videos are inefficient because they cause lack of clarity (Brame, 2016), give rise to poor viewing rates (Gaughan et al., 2014; Kay & Mann, 2022), trigger skipping even if they attempt to watch (Adnan, 2017; Sezer & Abay, 2018), create mental fatigue (Pi &

Hong, 2016), and increase extraneous cognitive load (i.e., cognitive load type exerted by the design of videos; Chandler & Sweller, 1991). This dictates the videos published on social media networks to be as short as possible, for example, 15 seconds in TikTok (Al-Khasawneh, 2022; Talkingtree, 2020). Here we have to confess that this is a marketing point of view, and it is nearly impossible to teach something in such a short amount of time. The videos used in teaching or recorded for the learning process are used for the best interest of the viewers rather than marketing or social media. Although it is well articulated that instructional videos should be shorter than they currently are (Adnan, 2017), we are in urgent need of finding a succinct answer to the shortness question. Namely, how long should videos be in education? Through a comprehensible literature review, we have come across several undertakings in this quest. Some of them focused on satisfaction (e.g., Meseguer-Martinez et al., 2016), engagement (e.g., Adnan, 2017; Guo et al., 2014; Lipp et al., 2014), mental fatigue (e.g., Pi & Hong, 2016), educator preference (e.g., Dong & Goh, 2015; Schallert et al., 2020), and student preference (e.g., Dirgahayu, 2017; Long et al., 2016) in videos, but heeding these variables do not guarantee learning. Ibrahim et al.'s (2012) study, the impact of video length on learning was not distinguished from other variables, precluding the identification of individual effects of video length. Undertakings scrutinizing the impact of video length on learning and variables related to flow experience were displayed in Table 1.

Table 1. The effect of video length on variables related to flow experience and learning in the related literature.

Researchers	**Used Length**	**Recommended Length**	**Research Method** [a]	**Unit of Analysis**	**Discipline**	**Variable** [b]
Guo et al. (2014)	N. A.	< 6 min.	Mixed	MOOC videos	Mathematics and science	Engagement
Doolittle et al. (2015)	9 min vs. ~77 sec vs. ~38 sec vs. ~19 sec	The shorter, the better	Quan	Uni. stds	Health education	Recall and application of knowledge
Pi & Hong (2016)	25 min.	< 10 min.	Quan	Uni. stds	N. A.	Mental fatigue
Slemmons et al. (2018)	11.03 vs. 5.52 min.	N. D. in general	Mixed	Middle school stds	Flipped learning in science	Performance, retention
Al-Naabi (2020)	~5.5 - ~9.5 min.	Qual <= 5 min.	Mixed	Uni. stds	Flipped learning in ELT	Learning
Thompson et al. (2021)	4-5 vs. 14 min.	Quan: N. D. Qual: 20 min.	Mixed	Uni. stds	Education	Learning
Yu & Gao (2022)	< 5, 10-20, > 30 min.	< 5 min.	Quan	Uni. stds	Flipped learning in ELT	Learning, engagement, and satisfaction

[a] *Solely primary sources were listed,*
[b] *Solely variables directly or indirectly related to variables of the current undertaking were listed,*
Quan = Quantitative method, Qual = Qualitative method, N. D. = No difference, Uni. stds = University students, ELT = English language education, N. A. = Not applicable

Literature review studies about use of video-supported learning (e.g., Hamel & Viau-Guay, 2019; Ramos et al., 2021; Sablic et al., 2021) highlighted that videos help teachers to accelerate learning and students' learning outcomes. For instance, Sablic et al. (2021) systematically reviewed those kinds of articles between 2008 and 2019, which mostly searched for evidence regarding students' learning outcomes, reflection, and feedback tools, and teachers' professional development. Besides, Hamel and Viau-Guay (2019) reviewed the studies placing much focus on the positive effect of video on teachers' reflective practices. In addition, the studies discussed the effective use of videos to improve teaching methods, self-observation, and learning during watching. Most of the outcomes showed the efficiency of using video to support teachers' professional development. On the other hand, systematic literature reviews highlighted some challenges and pinhole points. Common challenges were related to the lack of sample instructional videos for different grade levels and the inadequate length of the instructional videos. The studies revealed that there is a research gap about the optimal length of instructional videos.

Regarding the relation between perceived affective and cognitive learning, a quasi-experimental study conducted by Çakıroğlu et al. (2022), recruited 95 undergraduate students who attended an English course and were subjected to different types of assessment items. The findings revealed a moderate level of significant association between cognitive and affective perceived learning and their scores on traditional items. Whereas there was a significant but weak association between cognitive and affective perceived learning and their scores related to mixed assessment items. Even though the relationship between cognitive learning and perceived affective have been born in the assessment field, other studies should shed light on these discussion (e.g., Gray & DiLoreto, 2016; Vayre & Vonthron, 2019), up to our knowledge, with different contexts such as mathematical video assessments. All in all, optimal video length suggestions are fluctuating from 5 to 20 minutes in the research studies. Hence, scholarly studies on pinpointing optimal video length are still perceived as ambiguous. They appear to be equal in terms of employing quantitative and mixed methods; however, they have never preferred a qualitative method. While most of them included university students as a research study group, these studies were conducted in the field of education in general, higher education in particular. Taken together, pointing out a research gap in the literature, there seems to be a paucity of empirical studies in an attempt to end never-ending discussions in regard to video length. By taking the lead, the current study digs up the optimal video length discussion through the lens of learning and flow experience for having a say on the best practices. To this end, following research questions were framed below.

Does instructional video length impact (1) perceived affective, (2) cognitive learning, and (3) flow experience?

Methodology

Research design

This academic piece of work was undertaken through repeated measure experimental design among within-group experimental designs. In this kind of design, there is a single group which is exposed to all treatments. In an attempt to control order effect, we opted to randomize the order of treatment for each participant instead of introducing a counterbalanced group in that repeated measure experimental design with participant-wise randomization is tailored to reduce intra-individual differences (Creswell, 2005). In the present study, the treatment was three cases of instructional video length (short, medium, and long instructional video). The video length was decided comparative to each other. We did not administer any pre-test in that the gains in the constructs were not the focus of the study, but the situational experience. For the depiction of the research design, the consumer of this paper might have a look at in Table 2.

Table 2. The repeated measure experimental design process.

Randomization [a]	X	O	X
	Case 1	Post-test	Case 2

[a] Randomization of the order that each participant is exposed to the treatment.

Study group

Some 28 volunteer undergraduate students (M_{age}= 21.5) majoring at eight different departments at three different foundation or state universities located in Ankara and Istanbul, Türkiye, comprised the sampling of this study. They have been exposed to online learning due to COVID-19 pandemic times and most of them were educated through the flipped learning approach that requires lots of educational video watching. Their perceived cryptography pre-knowledge average was measured to be .64 (SD = .911) out of seven, which signifies they had practically none.

Describing instructional videos used

There were five declarative-knowledge videos ranging from 1:43 to 10:25 minutes. They were "non-talking head" and non-interactive Turkish videos available at 720p resolution. At this point, perceived video lengths were found to be statistically significant ($\chi2(2) = 42.554$, $p = .000 < .001$). This indicated that the video lengths were perceived to sufficiently differ. The videos had the same visual design elements and were narrated by the same person. They used the same instructional design principles such as benefiting from analogies. We picked all videos from the same learning domain, mathematics, and the same topic, cryptography, in an attempt to support comparability of them (See Table 3 for details). They were not pre-requisite of each other. Lastly, we compared the videos in terms of perceived difficulty and interestingness. As results of a series of Friedman tests, after discarding one video for excessive easiness, we came to the conclusion that three instructional videos at hand were perceived to be of equivalent difficulty ($\chi2(2) = 3.980$, $p = .137 > .05$) and equivalent interestingness ($\chi2(2) = 2.132$, $p = .344 > .05$) by participants.

Table 3. Instructional videos.

Name	**Length**	**Length attribute**	**Status**	**Objective**
What is cryptography?	1:43	N. A.	Used as a warm-up video	To explore hidden secret messages through history
Frequency stability	1:38	Short	Retained	To define frequency stability property
Caesar cipher exploration	2:56	N. A.	Discarded due to excessive easiness	To be knowledgeable about the first popular substitution cipher
Pseudorandomness	6:02	Medium	Retained	To understand how to generate numbers pseudorandomly
Enigma encryption machine	10:25	Long	Retained	To explore Enigma technology and its encryption machine

Table 3 showed the details about instructional mathematics videos in terms of their name, length, status, and learning objectives. To be more specific, the sequence of the video started with “What is cryptography?”, 1:43 mins in length. Students were able to explore hidden secret messages through history. It was used as a warm-up video for participants. Moreover, a short video was called “Frequent stability”, 1:38 mins in length. Students were able to define frequency stability properties. On the other hand, a long video was called “Enigma machine”, 10:25 mins in length. Students were able to explore Enigma technology and its encryption machine.

Materials and apparatus

Four data collection tools were utilized in this study: Personal information form, video perception form, perceived learning scale, and flow experience scale.

(1) Personal information form: It includes department, university, cryptography pre-knowledge, and medium of form filling.
(2) Video perception form: This form contains video perceptions of participants such as perceived difficulty, perceived interestingness, and perceived length.
(3) Perceived learning scale: Perceived learning scale, originally developed by Rovai et al. (2009), was adapted to Turkish culture by Albayrak et al. (2014) with a sample of university students. The 7-point Likert-type scale has three factors (affective, cognitive, and psychomotor) and nine items. Perceived affective learning is operationalized as a learning process building upon controlling one's own feelings, consolation, interests and perspectives by stating as a self-report (Wang, 2021) and cognitive learning is described as learning process functioning on an active, engaging cognitive basis that positively and persistently engages one’s senses (Mayer, 2012). The psychomotor factor was discarded from the scale in this study since instructional videos at hand do not intend to teach any physical ability. The scale was found to account for 66.45% of the total variance. Internal consistencies of cognitive and

affective factors were reported as .65 and .66, respectively due to limited sample size. Higher scores in the scale signify higher learning.

(4) Flow experience scale: Even though there are different models of flow experience, we adopted the componential flow experience model (Csikszentmihalyi, 1988) in that it is conducive to dimension-wise interpretation. Based on this model, the 7-point Likert-type scale was developed by Sahranç (2008) with a sample of university students. One-factor flow scale consists of 7-items. These items represent the following features of the flow experience:

1) Skill-challenge balance: This item measures the equilibrium between the ability of an individual and the difficulty of the task.

2) Clear goals: This feature of flow enables individuals to be completely aware of what is expected of them.

3) Immediate feedback: It means keeping track of how well one is doing.

4) Concentration and focus: This item corresponds to a complete absorption of an individual's attention and mental energy to the task.

5) Control: This feature of the flow is to know that an individual is in complete management of what is happening.

6) Disappearance of self-consciousness: During the task, individuals are not preoccupied with how they look, how others might perceive them etc., but the task itself.

7) Autotelic experience: This item is all about an individual's intrinsic motivation for completing the task.

Cronbach alpha reliability coefficient of the scale was calculated to be .80. The scale explains 47.21% of the variance in the construct. In the scale, a higher point means a higher flow experienced during the task.

Data collection procedure

An approval for the procedures followed in the study was obtained by a research ethics committee. In the beginning, an introductory video entitled "What is cryptography?" had to be watched first to familiarize the students with the cryptography. All the other videos were randomly ordered for each student to prevent order effect. The form was sent to two experts for checking face validity and then pilot-tested with two students, who have similar characteristics with participants, after which some corrections were made. The scales were administered for each video right after watching the related video. 60.7% of the participants used cellular phones to fill out the form, whereas 39.3% used personal computers for it. The device used for filling out the form was also used for video watching. The videos were watched individually.

Data analysis

IBM SPSS Statistics 24 was used to analyze the data. Some 21 participants were discarded from the dataset due to the considerably high number of unanswered items, leaving 28 participants. The reason behind such a high attrition rate is that the total length of videos was high, and they demanded high attention to watch. Factor scores were calculated by averaging all the items in the related factors. The Friedman test was employed because the sample was small. It is used to compare the mean ranks of related measures, if there are three or more (Friedman, 1940). In case of significant results, Wilcoxon signed-rank test was used as a post hoc. Holm-Bonferroni method was preferred in controlling family-wise error rate (Holm, 1979) since it provides a good control of it. 0.05 was preferred as the statistical threshold.

Results

The findings regarding the research questions were displayed in Table 4. The factors of flow experience were also analyzed.

Table 4. The effects of instructional video length on perceived affective learning, perceived cognitive learning, and flow experience using Friedman test.

Research Question (RQ)	**Video length attribute**	**Mean**	**SD**	**Mean Rank**	χ^2	**p**
RQ 1) Perceived affective learning	1) Short	4.07	1.45	1.96	3.685	.158
	2) Medium	3.88	1.26	1.77		
	3) Long	4.17	1.44	2.27		
RQ 2) Perceived cognitive learning	1) Short	4.38	1.49	2.21	2.272	.321
	2) Medium	3.93	1.27	1.95		
	3) Long	4.05	1.60	1.84		
RQ 3) Overall flow experience	1) Short	5.04	.98	2.36	5.722	.057
	2) Medium	4.53	.88	1.88		
	3) Long	4.55	.88	1.77		
3.1) Skill-challenge balance	1) Short	4.68	1.49	2.13	1.024	.599
	2) Medium	4.50	1.32	1.98		
	3) Long	4.18	1.49	1.89		
3.2) Clear goals	1) Short	4.79	1.34	2.23	2.886	.236
	2) Medium	4.29	1.70	1.88		
	3) Long	4.29	1.46	1.89		
3.3) Immediate feedback	1) Short	5.07	1.36	2.18	5.297	.071
	2) Medium	4.32	1.31	1.71		
	3) Long	4.71	1.49	2.11		
3.4) Concentration and focus [a]	1) Short [b]	5.43	1.69	2.39	8.330	.016*
	2) Medium [b]	4.39	1.42	1.88		
	3) Long [b]	4.18	1.42	1.73		

3.5) Control	1) Short	4.82	1.54	2.29	4.622	.099
	2) Medium	4.54	1.48	1.93		
	3) Long	4.36	1.25	1.79		
3.6) Disappearance of self-consciousness	1) Short	5.43	1.81	2.11	1.358	.507
	2) Medium	5.32	1.63	1.89		
	3) Long	5.21	1.62	2.00		
3.7) Autotelic experience	1) Short	5.04	1.43	2.20	4.277	.118
	2) Medium	4.32	1.36	1.71		
	3) Long	4.93	1.65	2.09		

[*] *Significant at the level of .05,*
[a] *Three Wilcoxon signed-rank tests as post-hoc were performed to determine the direction of the difference. To control family-wise error rate, p values were adjusted adhering to the Holm-Bonferroni procedure (Holm, 1979),*
[b] *1 > 2 ($p_{adjusted}$ = .015 < .05), 1 > 3 ($p_{adjusted}$ = .022 < .05),*
Note 1: The number of participants is 28,
Note 2. Degree of freedom is 2.

As results of Friedman tests, it was given in Table 4 that instructional video length yielded non-significant effect on perceived affective learning ($\chi^2(2) = 3.685$, $p = .158 > .05$), perceived cognitive learning ($\chi^2(2) = 2.272$, $p = .321$, $> .05$), and overall flow experience ($\chi^2(2) = 5.722$, $p = .057 > .05$). In relation to factors of flow experience, all of them indicated non-significant results except for concentration and focus factor ($\chi^2(2) = 8.330$, $p = .016 < .05$). The results of a series of the Wilcoxon signed-rank test showed that short video stimulated ($M = 5.43$, $SD = 1.69$) more concentration and focus as opposed to medium video ($M = 4.39$, $SD = 1.42$) and long video ($M = 4.18$, $SD = 1.42$).

Discussion

The study concluded that there was no effect of instructional video length on perceived affective learning and perceived cognitive learning. This finding seems to resonate in the literature. To illustrate, Slemmons et al. (2018) demonstrated that appropriate video length did not appear to exist from the point of performance as well as retention. This partially concurs with Thompson et al. (2021) who reached a similar finding in the quantitative part of their study despite recommending 20-minute videos as a result of qualitative data based on preference. Contrarily, there are quantitative (e.g., Yu & Gao, 2022) and qualitative (e.g., Al-Naabi, 2020) results calling for videos no longer than five minutes so as to empower learning. Indeed, the sentiment of “the shorter is the better” is rampant in the literature (e.g., Adnan, 2017; Doolittle et al., 2015; Rotellar & Cain, 2016; Su et al., 2023). However, considering the opposing results such as the one of the current studies and the ones mentioned above, the influence of video length on learning is still far from being definitive. That’s to say, from Tomaszwski’s (2023) information literacy point of view, the video's length depends on the content, purpose, and audience. Thus, it might be difficult to achieve the desired and exact length of an instructional video (Evens et al., 2022).

To the best of our knowledge, flow experience has never been studied in terms of video length in the literature. Thus, we had to interpret our findings through variables similar to one of its features such as satisfaction, engagement, and mental fatigue. To begin with, of the features of the flow experience, it drew attention that the disappearance of self-consciousness was the highest of all regardless of video length, meaning that the students were able to retreat themselves from irrelevant thoughts and immerse themselves in videos. The results of this experimental study also substantiated that video length did not have an impact on overall flow experience. Corroborating this, since skill-challenge balance is a salient feature of flow experience, the fact that we chose videos at equivalent difficulty levels might have contributed to this result. In contrast to the finding of the current study, Guo et al. (2014) recommended videos no longer than six minutes for leveraging engagement, whereas, in Yu and Gao's (2022) undertaking, the appropriate length was only five for maximizing engagement as well as satisfaction. The underlying reasons for the disparity between the finding of the study and those of the literature could be that aforementioned studies did not measure flow experience but constructs close to its features.

Overall, why is there no difference for both perceived learning and overall flow experience? In fact, viewers do not have to watch a long video non-stop, they may opt for watching them part by part benefiting from the "pause" button, which nullifies the length variables in practice. Alternatively, since Pi and Hong (2016) reported that videos longer than 22 minutes cause peak mental fatigue, videos used in the current study (max. 10 min. 25 sec.) might not have been long enough to create a difference.

Unlike the overall flow experience and its six other features, concentration and focus was experienced more in short videos compared to medium and long ones. In the same vein, students lose their attention (Alemdağ, 2022; Adnan, 2017; Fidan & Debbağ, 2023; Yu & Gao, 2022) and focus (Alemdağ, 2022; Slemmons et al., 2018) in long videos. Supportingly, Pi and Hong (2016) called for videos shorter than 10 minutes for preventing mental fatigue. Underlying reason for this consistent outcome might be the all-pervasive technology. Interrupting flow experience, digital individuals are continuously bombarded with multiple-screens, social media notifications, news feed, and other countless distraction sources. These distractions urge people to check their mobile phones as frequently as every 15 minutes (Asurion, 2019; Rosen & Samuel, 2015) or even 13 minutes (British Chamber of Commerce, 2018). Overall, the partial reason why the short video was more favorable than others in terms of concentration and focus feature may be that students had difficulty in maintaining their concentration and focus while watching longer videos because of such distractions. Although students, digital natives, are asserted to be more adapted to technology than we, digital immigrants, are (Bennett & Maton, 2010; Creighton, 2018), they also seem to be susceptible to these ubiquitous bombardments. At this point, shorter videos might help them regain their mental energy and focus by enabling them to check their phones, social networking sites and so forth, which seems to be haunting them during video-watching. In this regard, video segmentation practices (e.g., Doolittle et al., 2015; Fidan & Debbağ, 2023) might be helpful in chunking prolonged videos into bite-sized and meaningful parts.

Limitations and Implications

This study is not without its limitations despite rigorous effort. To begin with, the sample of this study appears to be quite small in the upshot of its relatively longer implementation time (i.e., watching 5 videos and repetitive administration of the scales). Moreover, since the participants were enrolled in the study on a voluntary basis, selection bias might be a problem. Lastly, all is relative to context, so subject matter, age, medium, prior knowledge etc. affect the dependent variables we studied. These three facts force us to be cautious in making clear and one-size-fits-all generalizations, undermining external validity of the study. The extension of the findings can be generalized to similar populations.

This study has a succinct recommendation for practitioners employing video-enhanced instructional methods such as flipped learning and anchored instruction. They are recommended to focus only on the instructional design of videos as long as they are shorter than 10 minutes. Regarding implications for researchers, an empirical academic endeavour with the purpose of answering the question of “what should the first seconds of an instructional video include for continuation of watching?” appears to be an intriguing topic. Besides, the academic community is suggested to place more emphasis on interactive video length, which has been a popular video type recently. Interactive videos are likely to boost control and immediate feedback features of the flow experience. Finally, yet importantly, “thinking to be in flow” and “being actually in flow” are two different things, so is actually learning and perceiving to be learning. Hence, learning and flow experience might be objectively measured in the future studies.

To date, the academic community has tended to determine a number and claim it should be the optimal video length. Trivializing this, neither perceived learning nor overall flow experience (except for concentration and focus feature) in this experimental study was found to be affected by instructional videos shorter than 10 minutes. For the literature, this finding appears to be guiding since the question of “how long should it be” was shown to be irrelevant. That is to say, the search for the optimal instructional video length that fits for all should end since it is like looking for hay in a haystack; it is everywhere and all comments on the video length are related to context.

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