CONFIGURING VIDEO-BASED LEARNING AND ONLINE LEARNING EXPERIENCE TO SHAPE STUDENTS' SATISFACTION

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ABSTRACT

Universities value student satisfaction with online learning techniques because it implies achievement. Additionally, teachers' use of ICT to boost student satisfaction should be examined. There is a limited amount of research on how video content in video-based learning and online learning experiences can improve student satisfaction as part of online learning strategy formulation. This study uses video content (understandability, reliability, and quality) in video-based and online learning to predict student satisfaction and test hypotheses and proposition using PLS-SEM and fs-QCA on 190 Indonesian university students who have taken online courses. The SEM analysis shows that online learning is the primary determinant of student satisfaction. Video content must be considered by teachers to boost online learning. Simultaneously, the online learning experience mediates content understandability and student satisfaction. The fs-QCA results offer both theoretical and practical insights that enable institutions to assess the degrees of satisfaction among students, distinguishing between those with high and low levels. Content understandability, reliability, and quality contribute to a high level of student satisfaction. Conversely, the absence of comprehensibility, excellence, and a satisfactory online learning encounter leads to diminished levels of contentment. The discoveries will assist establishments in enhancing the online educational encounter, thus impacting students' satisfaction.

Keywords: Video-based learning, online learning, students' satisfaction, fs-QCA, SEM.

INTRODUCTION

Online learning has evolved and is expanding globally due to the successful integration of information and communication technologies into educational practices (Tkachuk et al., 2021). This technological advancement has led to a significant transformation in university, shifting from traditional in-person classes to more flexible online education models (Muller & Mildenberger, 2021). The integration of these technologies has fundamentally enhanced the learning process, offering greater accessibility and adaptability to diverse learning needs (Mushtaha et al., 2022). Educational activities, including lectures, discussions, and collaborative projects, have increasingly utilized digital platforms (Fehrman & Watson, 2021; Lange &

Costley, 2020; Vahed & Rodriguez, 2021). However, the transition to online learning has not been uniform, with disparities in technological infrastructure (Ferri et al., 2020) and digital technology adoption (Rahmadi, 2021) posing challenges in some regions . Despite these obstacles, government initiatives and continuous technological improvements have facilitated the adaptation of educational systems to online environments. This shift has ensured the continuity of education and introduced innovative teaching methodologies, enriching the overall educational experience (Riaz et al., 2023). Consequently, online learning has become a vital component of modern education, providing new opportunities for both learners and educators to engage in dynamic and interactive learning experiences.

Universities worldwide have utilized online learning to replace traditional methods in order to assure the continuation of education (Riaz et al., 2023). Online learning has shown to be a valuable resource for educators and students, transcending limitations of distance and time (Openo, 2020). Nevertheless, the online learning process is not devoid of issues. Currently, numerous students are still facing challenges in accessing high-quality online education (Alamri, 2023). Furthermore, many lecturers fail to see that online learning serves not only as a substitute for classroom learning but also as a distinct learning environment in cyberspace. Lecturers believe that teaching and learning online simply involves transferring educational materials from physical classrooms to virtual environments. The internet has the ability to offer several benefits through information and communication technologies, including online discussion, educational assistance videos, and virtual exmination (Elzainy et al., 2020; Sablic et al., 2021; Wei & Chou, 2020). Therefore, students can have heightened learning satisfaction through online learning (Muzammil et al., 2021).

The use of video content to increase satisfaction has been widely researched (Cao et al., 2021; Lin et al., 2023; Lou & Xie, 2021). However, this research focuses on the marketing sector, such as the use of video content on social media to attract attention and provide satisfaction to customers (Lou & Xie, 2021). Research on video-based learning to enhance students' satisfaction, particularly in online education, is still scarce. Video-based learning involves incorporating video content into the educational process using information and communication technology and offers a unique experience. Shin & Park (2021) propose that video content has an impact on customer satisfaction. The findings indicate that content quality of the video leads to higher consumer satisfaction. Additional studies indicate that users experience satisfaction when video information is deemed reliable. When video content is perceived as easy to understand, it enhances user engagement and satisfaction (Munaro et al., 2021). Despite universities promoting the integration of information and communication technology in education, the advantages and significance of online learning experiences have not been fully recognized, and student satisfaction expectations have not been met. This necessitates the execution of continuous study inquiries into the aspects that precede the enhancement of student satisfaction. Universities should motivate lecturers to enhance the precision, effectiveness, and interest of online learning.

The objective of this study is to examine the impact of the content of video-based learning and online learning experiences on students' satisfaction. This study aims to evaluate the implications content video in video-based learning for enhancing online learning experiences and students' satisfaction. Prior research has only focused on analysing the effects of online learning practices on student satisfaction (Abdelrady & Akram, 2022), as well as investigating the influence of video-based learning on student satisfaction (Sablic et al., 2021). However, there has been no research conducted on the combined impact of these two components. Therefore, it is crucial to examine how video material might improve online learning experiences and boost student satisfaction. To the best of our knowledge, no studies have been carried out to examine how video content affects online learning experiences and student satisfaction with their learning, specifically in terms of its understandability, reliability, and quality. This research enhances the current body of knowledge by investigating the relationship between online learning and students' satisfaction.

Furthermore, this study employs a hybrid methodology combining structural equation modeling (SEM) and fuzzy-set qualitative comparative analysis (fs-QCA) to examine how online learning experience and video-based learning content, specifically video content quality, reliability, and understandability, impact student satisfaction. The structural equation modeling (SEM) analysis will examine the causal relationship among exogenous, mediating, and endogenous variables by assessing the validity, reliability, and presented hypotheses. The fs-QCA approach is used to forecast how online learning interactions using video-based learning content, focusing on content quality, reliability, and understandability, as well as online learning

experience can lead to different situations, such as high and low student satisfaction. In this context, "high student satisfaction" reflects a positive result due to the arrangement of external factors, whereas "low student satisfaction" signifies a negative result due to the arrangement of the external construct. This research not only delves into theoretical analysis of high and low student satisfaction predictions but also offers practical consequences for universities and lecturers. This study provides significant insights for universities and lecturers on how to utilize video-based learning content in online learning to enhance students' satisfaction. Utilizing video-based learning content in online learning can either stimulate positive experience as well as students' satisfaction or reveal factors that could diminish it. This enhances the theoretical framework and practical approaches for universities and professors through the use of new technology and a more profound comprehension of student behavior in the digital age.

LITERATURE REVIEW, HYPOTHESIS, AND PROPOSITION DEVELOPMENT

Online Learning Experience and Students' Satisfaction

Online learning refers to formal and informal learning activities that use information and communication technology to address physical and psychological distance issues, while enhancing interaction and communication between students and teachers (Mathrani et al., 2022). The quality of content or material communication in online learning is crucial when leveraging information and communication technologies.

According to Lorenzo & Moore (2002), a quality framework in online learning systems consists of five key elements: student satisfaction, effectiveness of learning, faculty satisfaction, student access, and institutional cost effectiveness. Additionally, key factors contributing to the effectiveness of online learning include the utilization of information technology, robust student-teacher interaction, high-quality learning materials, and faculty assistance (Gunasinghe et al., 2020). Therefore, the quality of online learning is strongly linked to student satisfaction.

Multiple sources indicate that online learning is more effective than traditional learning in enhancing students' knowledge, competencies, and satisfaction with the learning process (Landrum et al., 2021; Mok et al., 2021; Yu, 2021). Abdelrady & Akram (2022) claimed that incorporating technology and information communication in education makes it easier for pupils to obtain information, leading to increased satisfaction. Muzammil et al., (2021) examines the correlation between student contentment and online education. The research highlighted that online learning allows students the autonomy to delve into the content and facilitates increased interactive engagement with the teacher. However, teachers have not yet generally adopted this method in online education with their students. Teachers employ information and communication technology as a learning tool but do not fully use its possibilities (Jin et al., 2021). In other words, teachers use information and communication technology yet still employ traditional teaching methods. Several studies have demonstrated that online learning can enhance student satisfaction through increased online contact, communication, active learning, improved digital literacy, and the use of video-based learning (Bailey et al., 2021; Wong et al., 2022; Yu, 2022). Thus, universities must be capable of employing online learning to enhance students' satisfaction with online learning. Thus, we suggest the following hypothesis:

H1: Online learning experiences positively impacts students' satisfaction.

Content Video in Video-Based Learning and Online Learning Experience

Video-based learning is a concept that uses video content to enhance online learning experience (Sablic et al., 2021). Video-based learning facilitates interaction between students and teachers by utilizing video content to enhance the online learning experience (Ashour et al., 2023; Roman-Sanchez et al., 2023). Therefore, video-based learning has become a dynamic online tool for addressing technical issues due to technological advancements.

Video content is commonly utilized in marketing through information and communication Technologies (Mulier et al., 2021; Romero-Rodriguez & Castillo-Abdul, 2023; Tafesse, 2020; Zhang et al., 2020). Mathew & Soliman, (2021) specifically uses video content for tourism promotion. Research on the use of video content for visual interaction among users through shared videos has been extensively explored in marketing

but is not commonly seen in the education field, particularly in online learning (Andonova et al., 2023). Regarding video content, three key characteristics associated with video-based learning to enhance user interaction are understandability, reliability, and quality. Content understandability is the degree to which video content is easily comprehensible to users (Xu & Chen, 2006). Content reliability is determined by the degree to which people perceive the content as being true, trustworthy, and accurate (Xu & Chen, 2006). Meanwhile, content quality refers to the level at which users perceive the excellence of the information provided, impacting their attitudes (Xu & Chen, 2006). Hence, these three features are believed to impact user behavior and determine whether viewers experience satisfaction with the video content offered.

Various studies demonstrate that the comprehensibility of content has the power to enhance the user experience (Malakul & Park, 2023). Govers et al., (2007) disclosed that people exhibit attitudes towards video content when they see the information presented in the content as comprehensible. Complex or confusing information can cause users to feel uncertain, leading to a prolonged process of understanding and interpreting the context of video content (Zheng et al., 2017). Users may need to exert extra effort to decipher the meaning of the video. Consequently, if users struggle to comprehend the information sent in the video, they may choose to disregard the content altogether. Prior studies have indicated that video content that is easily comprehensible has the capacity to improve students' learning experiences in online educational practices (Malakul & Park, 2023). Thus, we propose the following hypothesis:

H2a: Content understandability in video-based learning positively influence online learning experience.

The reliability of content is contingent upon the video's value and its perceived accuracy by users (Xu & Chen, 2006). Hence, the reliability of content holds significant importance for users. The assessment of the reliability of information relies on an individual's inclination towards the information presented in the video content (Chesney & Su, 2010). Thus, the video should possess the ability to persuade visitors to watch the content being given. Therefore, users' perception of the information's value has a significant impact on their attitude. Empirical evidence has demonstrated a direct correlation between video content and enhanced experiential outcomes (Almusharraf & Khahro, 2020; van der Spoel et al., 2020). Hence, the dependability of video content directly influences the user experience. We propose the following hypothesis:

H2b: Content reliability in video-based learning positively influence online learning experience.

Another crucial factor that influences user experience is the quality of video content (Dabbous & Barakat, 2020). Content quality refers to how well the content meets the user's needs and expectation (Chesney & Su, 2010). Studies indicate that high-quality content impacts an individual's perception when comprehending video content (Kumar et al., 2021). Furthermore, high-quality video content is crucial for users as it facilitates their observation and comprehension of the information delivered, thus impacting user experience (Al-Adwan et al., 2021). On the basis of these consideration, we propose the following hypothesis:

H2c: Content quality in video-based learning positively influence online learning experience.

Mediating Relationship

Online learning experiences as a mediator between content video in video-based learning and student satisfaction. It has been demonstrated that online learning facilitates distance learning by eliminating time and distance restrictions on lecture delivery (Mathrani et al., 2022), thereby increasing student satisfaction (Jiang et al., 2021). Similarly, video content incorporated into video-based learning has afforded students novel opportunities to acquire superior distance learning (Yoon et al., 2021).

Video-based learning is implemented in diverse formats across multiple universities in Indonesia. First, the presenters employ online learning platforms such as Zoom, Microsoft Teams, Google Meets, or Moodle. This platform serves as a medium through which lectures are delivered to substitute the traditional lectures. Conceptually, lectures delivered through online learning platforms are essentially identical to traditional lectures in that they both involve students in person, albeit over the internet, where time and distance are not constraints (Sablic et al., 2021). Students continue to derive benefits from this lecture model due to its interactive nature, which allows for immediate feedback provision (Seo et al., 2021). Furthermore, the lecture model incorporates video content, in which the teachers delivers lectures through video recordings

that are indistinguishable from traditional lectures presented in various media formats (Sablic et al., 2021). Eventually, the lecture model integrates online platform lectures with supporting video content that attendees may obtain as video supplements (Yoon et al., 2021). The content of the supporting video is not required to be identical to that of a traditional lecture. The purpose of this supporting video is to enhance students' comprehension in situations where they are unable to engage in virtual interactions with the instructor or offer feedback on online lectures. In order to effectively impart knowledge to students, instructional videos must feature content that is dependable, credible, and of superior quality (Al-Adwan et al., 2021; Sablic et al., 2021).

The relationship between online learning, video-based learning, and students' satisfaction has been partially demonstrated in numerous studies. When students are granted the opportunity to attend lectures online, it will facilitate their learning when they are unable to physically attend class (Ferri et al., 2020) and offer them new experiences (Maqableh & Alia, 2021) that will contribute to their overall satisfaction (Landrum et al., 2021). Additional research indicates that video-based learning has been demonstrated to enhance student satisfaction by facilitating an effective learning experience (Roman-Sanchez et al., 2023; Sablic et al., 2021). Consequently, the following hypothesis is postulated:

H3a: Online learning experiences positively mediates the nexus between Content Understandability in Video-Based Learning and students' satisfaction.

H3b: Online learning experiences positively mediates the nexus between Content Reliability in Video-Based Learning and students' satisfaction.

H3c: Online learning experiences positively mediates the nexus between Content Quality in Video-Based Learning and students' satisfaction.

The Development of fs-QCA Propositions

The influence of online learning on the attitudes of students has garnered considerable interest (Bovermann & Bastiaens, 2020). In order to provide students with a diverse range of experiences during the online learning process, video-based learning is implemented (Maqableh & Alia, 2021). Video-based learning facilitates the online learning experience through the incorporation of video content (Sablic et al., 2021). Within the realm of video content, video-based learning can be associated with three factors that foster greater user engagement: understandability, reliable, and quality (Al-Adwan et al., 2021; Sablic et al., 2021). Understandability is determined by the degree of simplicity with which the presented information is understood (Malakul & Park, 2023). Reliability is considered to affect user attitudes is the precision of the information comprising (Chesney & Su, 2010). Quality content is identified by the degree to which the narrative conveying the information is both engaging and all-encompassing (Chesney & Su, 2010). These three components have the potential to foster increased students' engagement (Chen et al., 2021), motivation (Lee et al., 2021), and satisfaction (Sablic et al., 2021).

Furthermore, the degree to which online learning fulfills student expectations constitutes student satisfaction with online learning (Landrum et al., 2021). This gratification is the result of fulfilling the online learning requirements of students. Students' expectations for high-quality online learning will be fulfilled when they are provided with dependable, comprehensible, and high-quality instructional videos (Al-Adwan et al., 2021; Sablic et al., 2021). Consequently, this will have an impact on their overall satisfaction level. Therefore, online learning configured with video content in video-based learning plays an important role in determining whether the level of student satisfaction is high or low. Consequently, we hereby present the subsequent propositions (see Figure 2 for asymmetric model of fs-QCA):

Proposition 1: The presence of a single video content in video-based learning configured with online learning experience alone is insufficient to leads to high students' satisfaction.

Proposition 2: The absence of a single video content in video-based learning configured with online learning experience alone is insufficient to leads to low students' satisfaction.

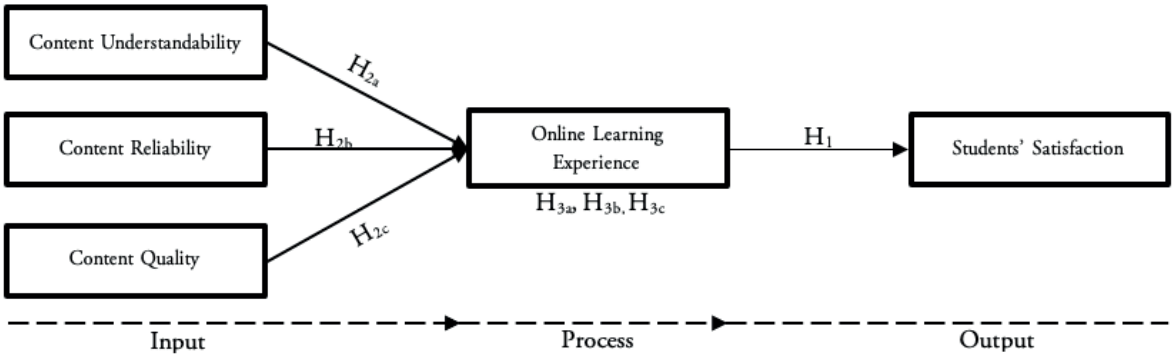

Figure 1. Proposed model to predict students' satisfaction

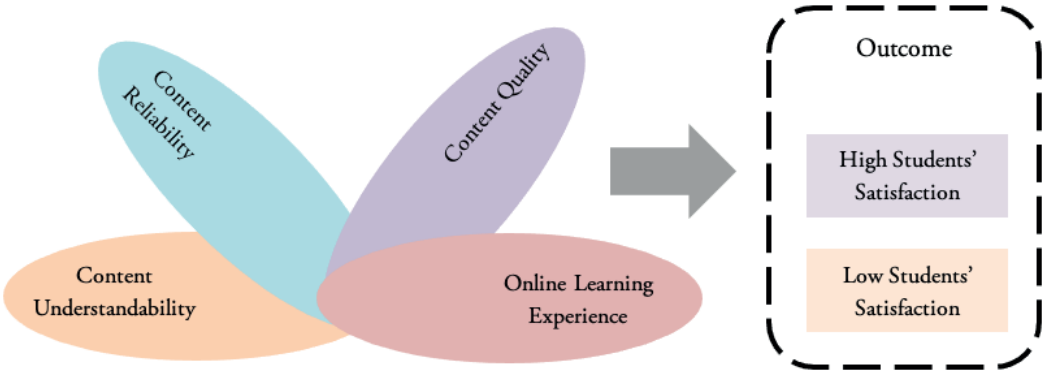

Figure 2. Proposed model for asymmetrical of fs-QCA method

RESEARCH METHODOLOGY

Measurement Instrument

The questionnaire for data collection was designed using a 5-Likert scale, where 1 and 5 corresponded to strongly disagree and strongly agree, respectively. Table 1 shows the comprehensive measurement construct that adapted from prior research. Online learning experience (five items), content understandability (four items), content reliability (four items), content quality (five items), and students' satisfaction (four items). Trials and pre-tests were conducted to validate items, questionnaires were distributed to 50 respondents, and Cronbach's alpha reliability was analyzed. The Cronbach's alpha values for all constructs above 0.8, demonstrating a satisfactory level of dependability in the pilot test.

Table 1. Measurement Items Development

Constructs	Scale's Type	Sources
Content Understandability	5-Likert Scale	(Delone & McLean, 2014; Kim et al., 2009; Liu, 2013)
Content Reliability	5-Likert Scale	(Delone & McLean, 2014; Kim et al., 2009; Liu, 2013)
Content Quality	5-Likert Scale	(Delone & McLean, 2014; Kim et al., 2009; Rai et al., 2002)
Online Learning Experience	5-Likert Scale	(Yousaf et al., 2022)
Students' Satisfaction	5-Likert Scale	(Yousaf et al., 2022)

Sampling and Data Collection

This study was undertaken through the collection of samples from students enrolled in different universities in Indonesia, with the aim of investigating their experiences regarding online learning. In order to obtain the necessary sample, this study implemented purposive sampling as its sampling methodology. Online distribution of the questionnaire was selected to increase the efficiency of data collection. Surveys were disseminated through the WhatsApp platform, utilizing Google Forms, between January and February of 2024. The research specifically focused on students who had engaged in online learning; with a total of 190 participants were included in the sample. Based on the characteristic of demographic, 138 (72.6%) of the participants were female and 52 (27.4%) were male, with an age range of 17–20 years (87.9%); the remaining participants were between the ages of 21 and 24 (12.1%). Conversely, within the age bracket of 25 to 32 years, no participants convened. With regard to online learning experience, the following percentages are as follows: 30.5% (58 participants) have <1 year of experience, 11.1% (21 participants) have >5 years of experience, and 8.9% (17 participants) have a range of 3-5 years of experience in online learning. In addition, an examination of the most frequently utilized online platforms reveals that 93.2% of students employ Zoom, whereas the remaining percentages utilize Microsoft Teams, Google Meet, and Moodle (3.7, 1.6, and 1.6%, respectively). In terms of online learning support devices, desktop computers (0.5%), laptops (10.5%), and smartphones (88.9%) were utilized most frequently by participants. The demographic characteristics are exhaustively detailed in Table 2.

Table 2. Respondent Profile

Characteristic	Items	Frequency	%
Gender	Male	138	72.6
	Female	52	27.4
Age	17 – 20	167	87.9
	21 – 24	23	12.1
	25 – 28	0	0
	29 – 32	0	0
	> 32	0	0
Online Learning Experience	< 1 year	58	30.5
	1 – 3 years	94	49.5
	3 – 5 years	17	8.9
	> 5 years	21	11.1
Online Learning Platform	Zoom	177	93.2
	Google Meet	7	3.7
	Microsoft Teams	3	1.6
	Moodle	3	1.6
Devices	Desktop	1	0.5
	Smartphone	169	88.9
	Tablet	0	0
	Laptop	20	10.5

Analysis Technique

This study employs a hybrid methodology for data analysis. To predict observed outcomes, specifically student satisfaction, these methods are utilized to accomplish research objectives, which include direct evaluation, mediation effects, and comparative analysis of configurations. First, Smart-PLS 3.0 software is utilized in conjunction with structural equation modeling (SEM) in this investigation. The SEM method is implemented through the evaluation of validity and reliability (Hair et al., 2017). More precisely, employing the R-Square criterion to assess the convergent validity, internal consistency, and discriminant validity of the model. Additionally, the SEM method permits researcher to examine hypotheses regarding direct and mediated effects.

Furthermore, the fuzzy-set qualitative comparative analysis (fs-QCA) methodology was implemented utilizing version 4.0 software. This strategy seeks to attain a configuration for developing the optimal solution

in accordance with observations of student satisfaction. The fs-QCA methodology entails the selection of calibrations for the truth table, followed by the prediction of outcomes (Ragin, 2023).

RESULTS

Construct Validity and Reliability

The research commenced by conducting a convergent validity test before evaluating validity and reliability. The convergent validity test findings indicate that the outer loading value exceeds the minimum requirement of 0.70 (Hair et al., 2017). The data used demonstrate good internal consistency and validity as indicated by values of cronbach's alpha and composite reliability (CR) exceeding 0.70 (Hair et al., 2017). Furthermore, the AVE value surpasses 0.50 (Hair et al., 2017), suggesting that the data does not pose issues about convergent validity (see table 2).

The next step in evaluating the validity and reliability is to perform a discriminant validity test on the research model. The Fornell-Larcker criterion test indicates that the Average Variance Extracted (AVE) value surpasses the other values (Henseler et al., 2015). The HTMT method in the discriminant validity test yielded a value <0.85 (Henseler et al., 2015), meeting the suggested level. The data utilized to test this research model demonstrates good discriminant validity. This study utilized a cross-loading matrix assessment to compare the strength of items by examining one construct against another (Henseler et al., 2015). The discriminant validity criteria are displayed in Tables 3–6.

Table 3. Construct Validity and Internal Consistency

Construct	Items	Factor Loading	AVE	CR	Cronbach's Alpha
Content Understandability	CU1	0.931			
	CU2	0.926			
	CU3	0.928	0.851	0.958	0.942
	CU4	0.906			
Content Reliability	CR1	0.872			
	CR2	0.845			
	CR3	0.860	0.738	0.919	0.882
	CR4	0.859			
Content Quality	CQ1	0.842			
	CQ2	0.845			
	CQ3	0.867	0.729	0.931	0.907
	CQ4	0.862			
	CQ5	0.852			
Online Learning Experience	OLE2	0.737			
	OLE3	0.786			
	OLE4	0.792	0.633	0.873	0.908
	OLE5	0.864			
Students' Satisfaction	SS1	0.858			
	SS2	0.872			
	SS3	0.939	0.807	0.943	0.920
	SS4	0.922			

Notes: OLE1 must be eliminated as it fails to meet the required threshold.

Table 4. Discriminant Validity of Fornell-Larcker Criterion

	CU	CR	CQ	OLE	SS
CU	**0.923**				
CR	0.652	**0.859**			
CQ	0.687	0.722	**0.854**		
OLE	0.357	0.269	0.238	**0.796**	
SS	0.571	0.368	0.508	0.536	**0.898**

Note: The AVE square root value is indicated by the bolded and blue highlighted numbers, while the remaining numbers represent the inter-construct correlations.

Table 5. Discriminant Validity of Heterotrait-Monotrait Ratio

	CU	CR	CQ	OLE	SS
CU	-				
CR	0.714	-			
CQ	0.724	0.804	-		
OLE	0.396	0.309	0.265	-	
SS	0.614	0.407	0.556	0.598	-

Table 6. Cross Loading Matrix

	CU	CR	CQ	OLE	SS
CU1	0.931	0.632	0.687	0.315	0.528
CU2	0.926	0.643	0.658	0.228	0.520
CU3	0.928	0.550	0.592	0.592	0.559
CU4	0.906	0.588	0.604	0.604	0.499
CR1	0.611	0.842	0.662	0.250	0.357
CR2	0.524	0.845	0.634	0.183	0.327
CR3	0.543	0.867	0.584	0.188	0.277
CR4	0.556	0.862	0.595	0.290	0.296
CQ1	0.642	0.613	0.852	0.309	0.449
CQ2	0.579	0.584	0.737	0.205	0.390
CQ3	0.558	0.568	0.786	0.153	0.443
CQ4	0.583	0.660	0.792	0.162	0.431
CQ5	0.562	0.655	0.864	0.173	0.451
OLE2	0.211	0.125	0.056	0.737	0.360
OLE3	0.270	0.317	0.275	0.786	0.424
OLE4	0.265	0.200	0.149	0.792	0.310
OLE5	0.362	0.204	0.239	0.864	0.554
SS1	0.478	0.233	0.347	0.539	0.858
SS2	0.555	0.419	0.565	0.356	0.872
SS3	0.497	0.355	0.491	0.483	0.939
SS4	0.524	0.317	0.426	0.541	0.922

Structural Equation Modelling (SEM) Findings

This study examines the direct influence of the online learning experience on student satisfaction, as well as the direct impact of content understandability, content reliability, and content quality in video-based learning on the online learning experience, based on the relationship hypothesis presented in Table 7. The hypothesis analysis results indicate that the direct effect has a p-value < 0.005. This indicates that H1 ($t = 5.028$, $p = 0.000$), H2a ($t = 3.809$, $p = 0.000$), and H2c ($t = 3.345$, $p = 0.001$) are supported, while H2b ($t = 1.950$, $p = 0.052$) does not have a significant effect on student satisfaction. The impact of content reliability on student satisfaction in video-based learning is not significant. In contrast, online learning experiences have the potential to foster heightened levels of student satisfaction. Instructors have the duty to enhance student satisfaction in online learning by providing understandable, reliable, and high-quality content through video-based learning. Moreover, the present study examined the mediating effects of content

understandability, content reliability, and content quality on the association between online learning and student satisfaction. The results presented in Table 7 and Figure 2 demonstrate that H3a (t = 2.861, p = 0.004) represents the mediating role of content understandability in the association between online learning and students' satisfaction. Conversely, H3b (t = 0.792, p = 0.429) and H3b (t = 0.532, p = 0.595) indicate a direct impact of online learning on students' satisfaction. The findings of this study demonstrate that online learning has a positive impact on satisfaction levels, with content understandability playing a mediating role.

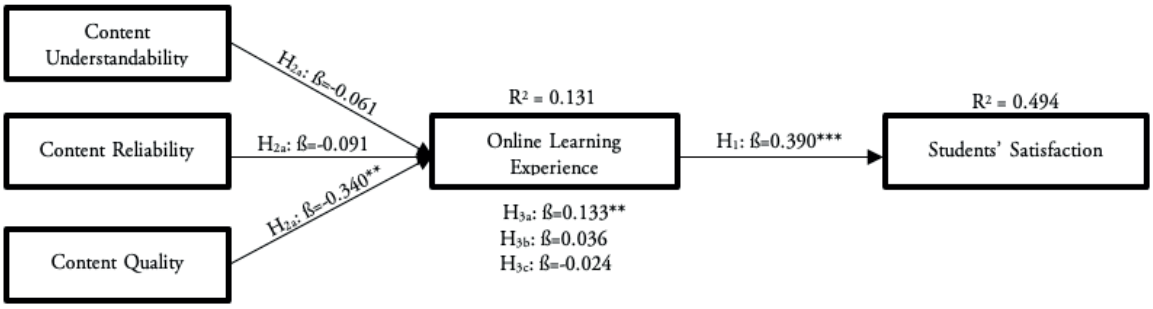

Figure 3. Structural Model Results

Table 7. Hypotheses Result

Causal Relationship	Path Coefficients	t-Value	p-Value	Conclusion
		Direct Relationship		
H_1: OLE → SS	0.390	5.028	0.000	Supported
H_{2a}: CU → OLE	0.340	3.046	0.002	Supported
H_{2b}: CR → OLE	-0.091	0.785	0.433	Unsupported
$H_{2c:}$ CQ → OLE	-0.061	0.127	0.631	Unsupported
		Indirect Relationship		
H_{3a}: CU → OLE → SS	0.133	2.861	0.004	Supported
H_{3b}: CR → OLE → SS	0.036	0.792	0.429	Unsupported
H_{3c}: CQ → OLE → SS	-0.024	0.532	0.595	Unsupported

Fuzzy-Set Qualitative Comparative Analysis (fs-QCA) Findings

Table 10 displays the outcomes of the fsQCA study pertaining to intermediate solutions, encompassing both core and peripheral conditions, with respect to high and low levels of student satisfaction. These results indicate the presence of two configurations that correspond to both "high" levels of student satisfaction and "low" levels of student satisfaction. According to Rihoux & Ragin (2009), it is recommended that the consistency value for a "high" level overall result should exceed 0.75, suggesting a combination of causative factors that is extremely relevant and acceptable. The overall solution consistency value for high student satisfaction results is 0.891, while the overall solution coverage value is 0.893. On the other hand, for "low" student satisfaction results, the overall consistency value is 0.844 and the overall solution coverage value is 0.387. The obtained scores demonstrate improved forecasts for both "high" and "low" levels of student satisfaction in terms of participation outcomes (see Figure 4 and 5). The findings of the fsQCA configuration, as shown in Figures 4, demonstrate a strong correlation and significance between high and low student satisfaction. The configurations results in the state of "presence" represented by symbol *, "absence" represented by the symbol ~, and "do-not-care" represented by blank space. The first solution (HSS) for attaining high levels of student satisfaction outcomes involves the integration of the "presence" condition of *CU, *CR, and *CQ, and the "absence" condition of ~OLE, so supporting the proposition 1. This combination exhibits a consistency value of 0.891 and a coverage of 0.893. The solution demonstrate the impact of content video in video-based learning on student satisfaction and its significance as a predictive factor for student satisfaction. Consequently, the engagement of content video in video-based learning leads

to an augmentation in their overall satisfaction. The next solution (LSS), which incorporates the "presence" conditions *CQ, *CR, and *CU along with the "don't care" condition for OLE, yields a significant level of student satisfaction, as seen by a consistency value of 0.909 and coverage of 0.877.

The next findings indicate that the integration of video content in video-based learning and online learning experience that can lead to a configuration path characterized by "low" student satisfaction, hence providing support for Proposition 2 (see Figure 5). To provide further clarification, solutions of LSS result in a combination of conditions that are either "absence" or "do-not-care". Solution configuration for low satisfaction (LSS) exhibits the "absence" condition characterized by ~CU, ~CQ, ~OLE, and the "don't care" condition characterized by CR. It has a consistency value of 0.844 and insurance coverage of 0.387. This demonstrates that the lack of content understandability, quality, and online learning experience will adversely affect the overall students' satisfaction. This arrangement demonstrates that the lack of CU, CQ, and OLE is regarded as a factor contributing to diminished student satisfaction in engaging in online education.

Table 8. Truth Table Algorithm for High Outcome

Antecedents to Achieve High Students' Satisfaction						
CU	CR	CQ	OLE	Cases	High students' satisfaction outcome	Raw Consistency
Yes	Yes	Yes	Yes	88	Yes	0.972
No	No	No	Yes	1	Yes	0.969
No	No	Yes	Yes	1	Yes	0.968
No	Yes	Yes	No	1	Yes	0.892
Yes	Yes	Yes	No	35	Yes	0.886
No	Yes	No	No	2	Yes	0.861
No	No	No	No	1	Yes	0.859

Notes: CU: Content Understandability; CR: Content Reliability; CQ: Content Quality; OLE: Online Learning Experience

Table 9. Truth Table Algorithm for Low Outcome

Antecedents to Achieve Low Students' Satisfaction						
CU	CR	CQ	OLE	Cases	Low students' satisfaction outcome	Raw Consistency
No	No	Yes	No	2	Yes	0.869
No	No	No	No	1	Yes	0.863
No	No	Yes	Yes	1	Yes	0.818
No	Yes	Yes	No	1	No	0.749
Yes	Yes	Yes	No	1	No	0.716
No	Yes	No	No	35	No	0.484
No	No	No	No	88	No	0.250

Notes: CU: Content Understandability; CR: Content Reliability; CQ: Content Quality; OLE: Online Learning Experience

Table 10. The Configuration of High and Low Students' Satisfaction

Configuration	Solution to Achieve High Students' Satisfaction HSS	Solution to Avoid Low Students' Satisfaction LSS
Content Understandability	●	⊗
Content Reliability	●	
Content Quality	●	⊗
Online Learning Experience		⊗
Raw Coverage	0.876	0.367
Unique Coverage	0.679	0.073
Consistency	0.908	0.865
Overall Solution Coverage	0.893	0.387
Overall Solution Consistency	0.891	0.844

Notes: HSS: High Students' Satisfaction; LSS: Low Students' Satisfaction

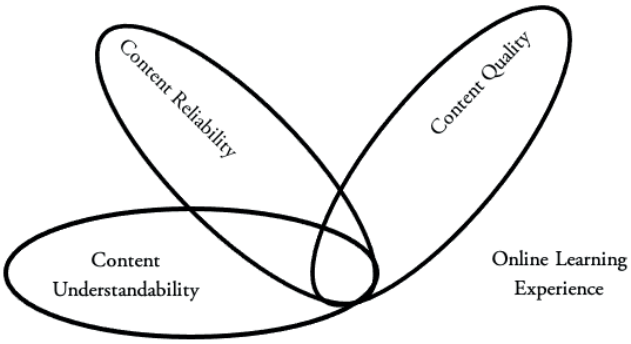

Figure 4. Configuration HSS that Contributes to Achieve High Students' Satisfaction

Note: Ellipse with solid line represents "presence" condition, meanwhile ellipse with no line represent "do-not-care" condition.

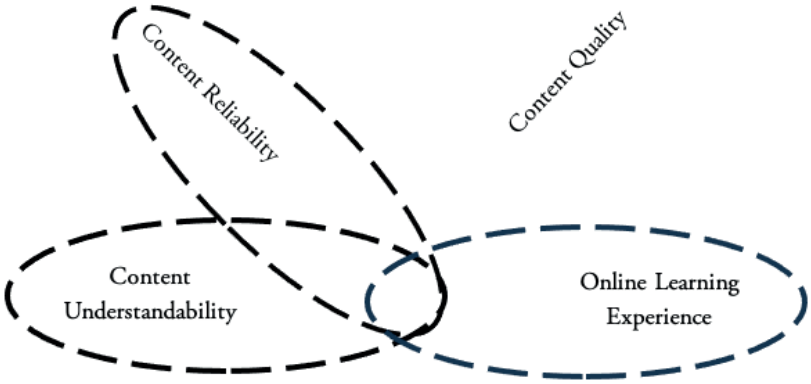

Figure 5. Configuration LSS that Contributes to Avoid High Students' Satisfaction

Note: Ellipse with doted-line represents "absence" condition, meanwhile ellipse with no line represent "do-not-care" condition.

DISCUSSIONS

This study offers valuable insights into the development of online learning experiences that use video content in video-based learning. It also examines the influence of comprehensibility, reliability, and quality of content on student satisfaction when engaging in online learning. The study use the structural equation modeling (SEM) technique to examine the causal association between constructs and to verify all submitted hypotheses. The results indicate that there is a significant impact of online learning on student satisfaction. Consistent with prior studies, Muzammil et al., (2021) asserted that online learning provides students with the autonomy to enhance their learning capabilities. Students are granted permission to use information and communication technology (ICT) into their educational endeavors, enabling them to engage in knowledge exploration and expand their perspectives (Inan Karagul et al., 2021). This is facilitated by the enhanced digital literacy among students, resulting in improved levels of active participation in the learning process. Hence, the utilization of online learning has the potential to enhance student satisfaction with the educational experience. In line with the results, Sever & Cati, (2021) finding confirmed that the enhancement of the digital literacy strenghtened satisfaction during the onlie learning. Therefore, the first hypothesis is corroborated. The concept of video-based learning involves the utilization of video information to enhance student learning methods (Sablic et al., 2021). The video content will facilitate students' comprehension of the learning material in situations where they perceive direct study with the teacher (Malakul & Park, 2023), whether in person or online, as insufficient. Conversely, the evaluation of video content is extensively examined within the realm of marketing (Romero-Rodriguez & Castillo-Abdul, 2023). Video content is employed as an instructional tool to elucidate complex concepts and topics, thereby providing students with tailored information that aligns with their specific learning needs (Dinmore, 2019).

This study aims to investigate the utilization of video content within an educational setting, specifically as a means to enhance the learning experience. Within the realm of video-based learning, it is imperative that the content is comprehensible, precise, and of superior quality in order to enhance students' comprehension (Malakul & Park, 2023). The results indicate that there is a positive and statistically significant relationship between content understandability, reliability, and quality in video-based learning and student satisfaction in the context of online learning. This assertion is grounded in the observation that the utilization of video content within video-based learning has the potential to foster students' comprehension of the learning process, hence exerting an impact on their attitudes. The concept of content understandability refers to the degree to which a video is able to facilitate comprehension for the user (Xu & Chen, 2006). Enhanced clarity in the video facilitates consumers' comprehension of the video's context. The concept of content reliability emphasizes the precision and dependability of the audiovisual environment (Xu & Chen, 2006). The higher the accuracy and relevance of the material to students' learning goals, the greater their interest in viewing the video content. Content quality pertains to the degree to which information aligns with user expectations and the level of excellence exhibited by the content (Xu & Chen, 2006). Moreover, when video content is comprehensible, dependable, and of superior quality, it will enhance student satisfaction in video-based learning. Thus, the findings provide support for hypotheses 2a, 2b, and 2c. This finding aligns with prior research, where prior research suggested that video content has the potential to enhance user engagement by providing easily comprehensible, high-quality, and trustworthy content, ultimately leading to user satisfaction (Al-Adwan et al., 2021; Sablic et al., 2021).

Based on prior scholarly investigations, video content has been identified as a valuable resource for users in acquiring information, particularly in the context of information and communication technology (Al-Adwan et al., 2021; Sablic et al., 2021). A significant number of pupils continue to struggle with comprehending the educational content when engaging in online learning (Ferri et al., 2020). This phenomenon may occur due to the diminished level of direct instructor involvement in the online learning process, resulting in a reduced amount of information received by pupils. Conversely, scholarly investigations also indicate that the efficacy of online media in facilitating learning remains suboptimal due to teachers' limited exploration of the advantages offered by information and communication technology (Al-Kumaim et al., 2021). Educators continue to employ traditional instructional approaches in the context of online media for the purpose of facilitating the learning process. This entails a transition from traditional classroom-based learning methods to virtual learning platforms, but using conventional instructional techniques. Consequently, students may encounter difficulties comprehending the subject matter. The results indicate that the relationship between content understandability in video-based learning and student satisfaction is influenced by the mediating factors of online learning experience. These findings elucidate that students will experience satisfaction when they engage in learning through online media that is designed with the comprehension of the video content. This suggests that the provision of easily comprehensible can enhance students' learning experience as well as satisfaction in the online learning process. Teachers are required to develop video-based courses that are seamlessly incorporated into online learning. These supporting video content should be educational and of high quality, facilitating students' comprehension of the learning material and ultimately fostering student satisfaction. Consistent with prior research, the provision of comprehensible information and high-quality films has been shown to enhance user satisfaction when accessing information and content inside posted videos (Malakul & Park, 2023). Consequently, the findings provide support for hypotheses 3a. This contrasts with the correlation between the content reliability, quality, online learning experience, and student satisfaction. The presence of unreliable information in video content can lead users to exhibit reluctance in further accessing the content (Zheng et al., 2017). Conversely, when the information or material presented in video content is accurate, genuine, and trustworthy, users are more likely to express satisfaction with the video content (Zheng et al., 2017). Nevertheless, the findings of this study indicate that the reliability and quality of content in video-based learning, which serves as an antecedent of online earning experience and student satisfaction, does not align with the emerging theoretical framework. Prior studies have posited that the reliability and quality of content videos may enhance user satisfaction (Kar, 2021). However, there is a dearth of empirical research investigating the impact of content video reliability, quality, and online learning experience within the educational domain, particularly in the context of enhancing students' satisfaction.

Based on configuration analysis in fs-QCA, complexity theory highlights the significance of video content (namely content understandability, reliability, and quality) and the online learning experience in achieving

high and low levels of student satisfaction. There exist two distinct approaches to attaining varying degrees of student satisfaction in the context of online learning. Furthermore, it is worth noting that every configuration exhibits a notable degree of consistency and comprehensiveness, suggesting that the resultant solutions include the essential prerequisites for attaining elevated levels of contentment while evading suboptimal levels of satisfaction. The configuration path in the HSS solution indicates that teachers can attain high levels of student satisfaction by effectively utilizing content understandability, reliability, and quality in video-based learning. Even though other models place emphasis on the "don't care" condition, it does not exert a substantial influence on the attainment of elevated levels of student satisfaction. Conversely, the primary determinant of diminished student satisfaction, as indicated by the LSS solution, is the lack of concern exhibited by teachers regarding the utilization of content understandability and content quality in video-based and online learning experience. These findings offer novel insights for research employing the fs-QCA approach, enabling universities to gain a new perspective on the implementation of online learning methods. In this scenario, it is crucial to engage in video content practice and foster online learning experiences for students.

CONCLUSION

Theoretical Implication

This study contributes to the current literature on online learning experiences, video content in video-based learning, and student satisfaction. This research offers valuable insights into effective ways for enhancing student satisfaction in online learning, specifically in the context of video-based learning, by presenting a framework model. The video-based learning conceptual model, which prioritizes the utilization of video information, is employed to enhance student satisfaction. The objective of this study is to investigate the impact of integrating online learning experiences with video content in video-based learning on student learning satisfaction. This study demonstrated a considerable improvement in student satisfaction as a result of the online learning experience. Therefore, it is possible to employ online learning methodologies in educational curriculum that incorporate information and communication technology in order to enhance the overall quality of learning. This study investigates three key aspects that contribute to the enhancement of student satisfaction in online learning through video-based learning. These factors include content understandability, content reliability, and content quality (Al-Adwan et al., 2021; Sablic et al., 2021). Student satisfaction in the online learning experience is enhanced by information and content that are comprehensible, reliable, and high quality (Sablic et al., 2021). There are three key characteristics that contribute to the adoption of video-based learning as a viable technique for enhancing the online learning experience. Furthermore, the inclusion of video content in video-based learning has been found to enhance student satisfaction, mostly due to the immersive nature of the online learning environment. Nevertheless, this study demonstrates that the combination of content quality and reliability, along with online learning experiences, is insufficient to foster student satisfaction in utilizing learning. To summarize, the findings of this study indicate that the understandability, reliability, and quality of content can enhance the online learning experience and student satisfaction to some extent. Moreover, the factor of content understandability is the sole determinant that may foster the online learning experience, hence enhancing student satisfaction. In order to enhance student satisfaction, researchers have the potential to incorporate factors such as content understandability, reliability, and quality in video-based learning (Al-Adwan et al., 2021; Sablic et al., 2021) within online learning experiences. Additionally, integrating content understandability in video-based learning with online learning satisfaction can contribute to the overall satisfaction of students.

In order to optimize student satisfaction, researchers can include video content into video-based learning by integrating online learning experiences into online learning practices, as indicated by the results of the fs-QCA configuration analysis. The establishment of causal conditions for high and low student satisfaction is contingent upon the level of theoretical complexity attained in this study. According to the results of this study, there exist two distinct solution configurations that can be employed to attain high levels of student satisfaction and prevent low levels of student satisfaction. Consequently, this research provides a theoretical foundation for future investigations focused on enhancing student satisfaction in the context of online learning.

University's Practice

This study also enhances university practice. As institutions develop techniques to enhance the online learning experience and student satisfaction, this assertion holds particular validity. With the increasing popularity of information and communication technology (ICT) in society, corporations, and governments, universities have the opportunity to enhance the effectiveness of online learning through the incorporation of video content in video-based learning. Examining the suitable determinants in video-based learning that influence the online learning experience has consequences for enhancing student satisfaction, hence yielding advantages for the university as a whole. For instance, this study was conducted in Indonesia and identified methods to enhance student satisfaction while evaluating the efficacy of the strategy's implementation. The findings of this study suggest that there is potential for the development of initiatives aimed at enhancing the online learning experience and increasing student satisfaction.

The present study revealed a substantial positive correlation between online learning experiences and video content in the context of video-based learning, and student satisfaction. In essence, the enhancement of the online learning experience is directly facilitated by the factors of content understandability, reliability, and quality (Al-Adwan et al., 2021; Sablic et al., 2021). Furthermore, the online learning experience plays a crucial role in enhancing student satisfaction. Creating content that is understandable, reliable, and high quality is crucial for fostering student satisfaction. Therefore, the findings of this study validate the notion that many parameters related to video content in video-based learning and online learning have a positive impact on enhancing student satisfaction.

In order to optimize student satisfaction, researchers can incorporate video content (including its understandability, reliability, and quality) in video-based learning and incorporating the online learning experience into the results of the fs-QCA configuration analysis. The theoretical complexity obtained in this research determines the configuration of causal conditions for high and low satisfaction. The research findings indicate the existence of two configurations that can be categorized as "high" and "low" levels in terms of student satisfaction. Consequently, these findings provide a theoretical basis for future studies focused on enhancing satisfaction in the context of online learning.

The findings of this analysis indicate that there is a substantial positive relationship between content understandability, reliability, quality, and student satisfaction. Put simply, incorporating video content into video-based learning is believed to enhance students' comprehension and hence boost their satisfaction. Therefore, the findings of this study validate that the elements related to video content, including content understandability, dependability, and quality, have a significant role in enhancing student satisfaction within the context of video-based learning. Universities can gain significant insights and perspectives by attaining high levels of student satisfaction, which in turn allows them to make better informed decisions and develop effective strategies. Furthermore, the findings of the fs-QCA expand the opportunities for institutions to enhance the caliber of their educational offerings. Each configuration yields distinct combinations that will lead to varying degrees of enjoyment, either high or low. This study demonstrates that the integration of the HSS configuration path, which yields a heightened level of satisfaction, and the LSS configuration path, which mitigates low student contentment, can be utilized to ascertain the extent of student satisfaction in the context of online learning in subsequent endeavors.

Limitation and Future Direction

Although this study has made substantial theoretical contributions and provided insights into students' learning practices, it is important to acknowledge its limitations. This study is constrained by the utilization of video content in video-based learning and its impact on the attainment of student satisfaction in online learning experiences. The research aims to investigate the influence of video-based learning and online learning experiences on students' satisfaction in order to enhance the overall online educational experience. The research primarily concentrates on examining the impact of video content, including its comprehensibility, dependability, and quality, on student satisfaction in the context of online learning. Overall, the primary conclusions indicate that students' satisfaction is substantially influenced by online learning experiences, as well as the quality and attributes of video content in video-based learning. This research also offers insights into the combinations of elements that contribute to both high and low levels of student satisfaction in online learning.

The limitations of this research encompass restricted applicability due to its exclusive concentration on Indonesian university students, a small sample size, dependence on self-reported data, and the possibility of bias in the sampling process. Despite its limitations and lack of surprise outcomes, this study has the potential to make a valuable contribution to the existing body of knowledge on video-based learning. According to Lorenzo & Moore (2002), the online learning experience encompasses five primary components: student satisfaction, learning effectiveness, faculty satisfaction, student access, and institutional cost effectiveness. Hence, it is anticipated that future investigations will ascertain the potential impact of online learning practices on enhancing learning effectiveness, faculty satisfaction, student access, and institutional cost effectiveness. Furthermore, this study relies on data collected from respondents in Indonesia, hence limiting its generalizability to other nations. This research exclusively focuses on the online learning experience in Indonesia, as it is being widely adopted in other countries. Hence, it is recommended that future studies expand the scope of the sample locations to encompass a broader range of countries, including both developed and developing nations. This study investigates the impact of video content implementation strategies on student satisfaction in video-based and online learning experiences. Nevertheless, online learning methodologies continue to possess extensive utility in attaining student satisfaction, even in the present era.

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