

MOOC Videos in the Age of Streaming: Learner Preferences and Perceptions

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Abstract

Massive Open Online Courses (MOOCs) have become a significant medium for global education, with video lectures (MVLs) serving as a cornerstone of content delivery. This study investigates how learners perceive affect, cognition, and social cues in MVLs, analyzing 2,239 learner-generated reviews (student evaluations) across 25 courses using a qualitative approach. The findings emphasize the lecturer's role as both an educator and performer, highlighting their capacity to inspire and engage through charisma, humor, and clarity. Learners also approach MVLs in a *want-to-learn* streaming culture, blending educational motivation with entertainment-like consumption patterns. Social presence, achieved through conversational tones and non-verbal cues, fosters a sense of connection, while shorter, high-quality videos enhance cognitive engagement. These insights are contextualized within the CASTLE framework, offering practical recommendations for MOOC design and theoretical contributions to understanding digital learning environments.

Keywords: MOOC; perception; cognition; affect; social cues; video lectures

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Massive Open Online Courses (MOOCs) have revolutionized access to education by providing flexible, scalable learning opportunities to diverse global audiences (Sultan, 2019). Central to the MOOC experience is MOOC video lectures (MVLs), which serve as both the primary content delivery method and a critical factor influencing learner engagement and satisfaction (Crook & Schofield, 2017). Recent research has explored various dimensions of MOOC effectiveness, including the role of motivation, cognitive engagement, and social presence (Deng & Gao, 2023). However, limited attention has been paid to how learners perceive the interplay of affective, cognitive, and social cues in MVLs, particularly the role of lecturers and learners' evolving consumption behaviors.

This study addresses this gap by analyzing learner reviews from 25 MOOCs to understand how MVLs foster or hinder engagement. Grounded in the cognitive-affective-social theory of learning in (digital) environments (CASTLE: Schneider et al., 2022) framework, the study explores three dimensions: affect, cognition, and social connection, with a specific focus on the lecturer's dual role as an educator and performer. By examining how learners consume MVLs in a "want-to-learn" (Fischer, 2014) streaming-like culture, the study provides actionable insights for MOOC practitioners and theoretical advancements in digital learning research.

Literature Review

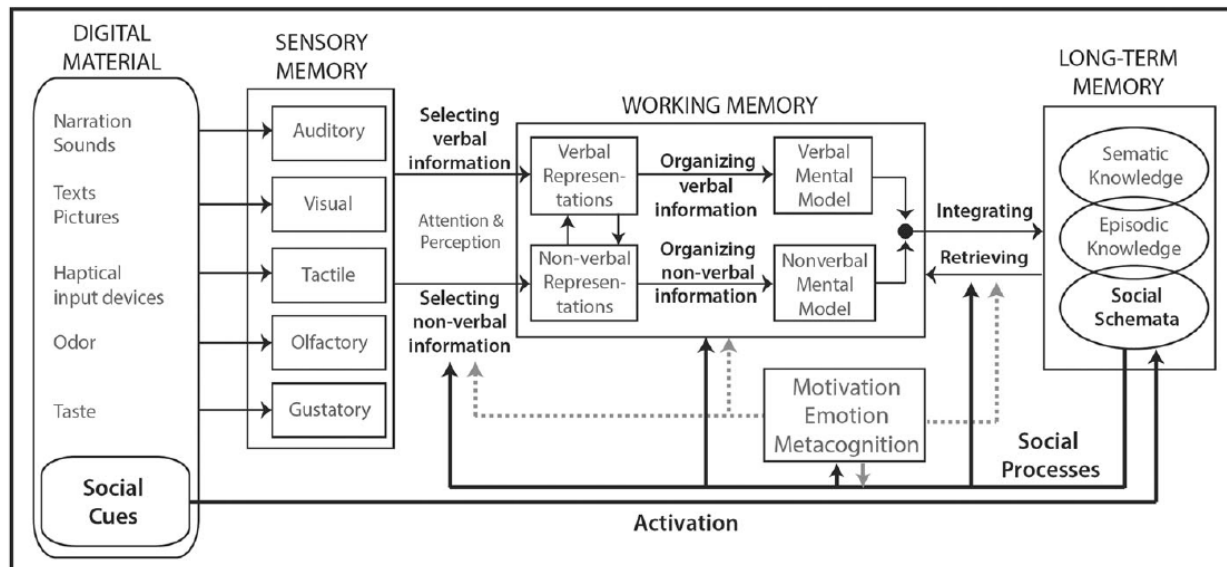
Cognitive-Affective-Social Theories of Learning

Cognitive load theory (CLT; Sweller & Chandler, 1991; Paas & Ayres, 2014) describes how learners process information through sensory, working, and long-term memory, with the finite capacity of working memory as a key constraint. CLT distinguishes intrinsic, extraneous, and germane load. Effective instructional design aims to reduce extraneous load while supporting germane processing. Building on CLT, the *cognitive theory of multimedia learning* (CTML; Mayer, 2024) proposes that audio and visual information is processed through dual channels and integrated into long-term memory. Subsequent work extends these cognitive accounts by incorporating affect and social facilitation: Moreno's (2007) *cognitive affective theory of learning with media* (CATLM) incorporates motivation and affect; Plass et al. (2014) show that appealing design elements can evoke positive emotions that support comprehension; and the *augmented cognitive load theory* (aCLT; Huk & Ludwigs, 2009) emphasizes how cognitive and affective mechanisms work together. *Social agency theory* (Mayer et al., 2003), meanwhile, adds that social cues in learning artifacts can foster rapport and support learning, particularly when instructors are visible.

Tying these perspectives together is the *cognitive-affective-social theory of learning in (digital) environments* (CASTLE; Schneider et al., 2022). CASTLE explains learning from digital materials as shaped by cognitive processing alongside social processes triggered by social cues. These cues activate social schemata, which can foster metacognition, emotional connection, motivation, and perceptions of social connection. CASTLE builds on CLT and CTML and adds the *social mediation hypothesis*: "social processes triggered by social cues mediate the cognitive processing of information when learning with digital materials" (p. 8). In this view, learning is more likely when materials evoke social and para-social processes that interact with motivation, emotion, and metacognition (Figure 1).

Figure 1

The Cognitive-Affective-Social Theory of Learning in (Digital) Environments (Schneider et al., 2022)



Note. While the original comprehensive model includes all sensory inputs (including odor/taste), this study focuses specifically on the visual and auditory cues relevant to video lecture consumption.

In CASTLE, the number and strength of social cues embedded in digital material shape the degree to which social processes are activated. In addition, learners may differ in how readily social schemata are activated, making social processes more or less influential in supporting cognitive processing. Dynamic digital learning materials may contain greater social traces and so may be more likely to elicit these processes. This theory is particularly relevant for studying MOOCs and video lectures because it offers a framework to assess how learners perceive and process video content that promotes affect, cognition, and social connection.

Applying CASTLE to MVL Research

CASTLE provides a targeted framework for this study by explaining how social cues in digital media trigger social and parasocial processes that, in turn, shape cognition and affect. Drawing on Schneider et al.'s activation and cognitive influence hypotheses, we conceptualize learners' references to clarity, organization, and understanding as evidence of social processes mediating selection, organization, and integration of information in MVLs. Likewise, their reports of enjoyment, boredom, warmth, and detachment reflect the interaction hypothesis, in which motivational and emotional states are intertwined with socially cued processing. Because video lectures are dynamic, visually and aurally rich artifacts, they carry a relatively high "social trace," making them especially likely to elicit social presence and parasocial interaction through eye gaze, gesture, voice, and conversational language. In this study, we therefore use CASTLE not only as a broad lens but as a set of guiding assumptions for coding affective, cognitive, and social references in learner reviews and for interpreting how lecturer performance, production choices, and design elements jointly shape learning in MOOCs.

Studies Into MOOC Learner Perceptions

Prior research on MOOC learners' perceptions of video lectures points to three recurring sets of factors: *affective*, *cognitive*, and *social*.

Affective Factors

Videos designed with emotionally engaging features, such as storytelling, humor, and visually appealing content, can reduce cognitive load and sustain attention (Wong & Adesope, 2021). Deng and Gao (2023), for example, analyzed 4,534 learner reviews from a Chinese University MOOC platform using MAXQDA and found that learners appreciated instructors who incorporated humor and made content relatable, particularly in technical subjects. Personalization can also contribute to emotional engagement; learners respond positively to videos that use conversational language and personal anecdotes, fostering relevance and connection (Hew, 2016). Emotional design features (e.g., warm colors, inviting graphics, and human-centered storytelling) have been shown to increase intrinsic motivation and enjoyment, particularly in career-oriented courses (Peng & Jiang, 2022), and positive emotional responses may support persistence in MOOCs (Henderson & Schroeder, 2021). However, overly emotional designs may alienate learners who prefer a straightforward, fact-based approach. Lawson et al. (2021) caution against overusing dramatic or whimsical elements, for example, as this can detract from perceived credibility.

Cognitive Factors

Cognitive engagement with MVLs depends on clarity, organization, and interactivity. Ou et al. (2019) propose a seven-principal model for video design that integrates instructional methods with presentation style to reduce cognitive load, emphasizing practices such as signaling and segmentation to maintain engagement in asynchronous environments. Learners consistently value these elements. Deng and Gao (2023) identified “organized,” “detailed,” and “comprehensible” as key attributes of MOOC videos. Logical structuring, clear explanations, and step-by-step demonstrations support comprehension, and incremental progression from basic to advanced topics can help mitigate cognitive overload (Guo et al., 2014). Video length is another important factor, with shorter videos (typically 5–10 minutes) often associated with stronger engagement (Zhang et al., 2021) and higher completion and likelihood to replay and review (Guo et al., 2014). Connections to quizzes and external resources can further support cognitive engagement by helping learners consolidate and self-assess understanding (Vural, 2013), and supplemental materials such as slides, readings, and post-video assessments are frequently cited as valuable supports (Shah et al., 2022). When videos are too dense, integrating multimedia elements (e.g., diagrams and animations) and using signposting (headings, transitions, highlights) can help manage cognitive load and support retention (Mayer, 2021; Hew et al., 2018).

Social Factors

Social presence in MVLs can shape learners' sense of connection and community, which is often constrained in MOOCs because participation is typically asynchronous and solitary.

Instructor-visible videos, conversational delivery, and interactive prompts can reduce this sense of isolation by strengthening interpersonal connection (Alemdag, 2022). Lawson et al. (2021) found that learners perceived videos with instructors on-screen as more engaging and trustworthy, even when the content was unchanged. Learners also respond to instructors' enthusiasm and authenticity, which can foster confidence and motivation (Hew et al., 2018). Social connection can be further supported when MVLs are integrated with discussion and collaborative activities that prompt interaction with peers (Deng & Gao, 2023), and course-level features such as forums, peer feedback, and group projects can complement MVLs by providing spaces for interaction and reflection (Shah et al., 2022). At the same time, learners may still prioritize clarity and relevance, so social features should support rather than compete with instructional goals (Zhang et al., 2021).

Research Questions

The literature reviewed shows that learners' positive and negative perceptions of MOOCs can be detected in reviews. This paper uses CASTLE (Schneider et al., 2022) as a conceptual framework to interpret how learners perceive affective, cognitive, and social cues in MVLs. Therefore, RQ1 asks: How do learners perceive the role of affective, cognitive, and social cues in shaping their engagement with MOOC video lectures? The literature also showed that design considerations can influence positive and negative perceptions and evaluations of MOOCs. Therefore, this study will explore RQ2: What characteristics of MOOC video lectures most significantly impact learner affect, perceived cognition, and feelings of social connection?

Methods

Data Collection

This study uses secondary data. The starting point of data collection was the Class Central list (2023), The 250 Most Popular Online Courses of All Time (Shah, 2023). To focus on traditional higher education subjects and lecture styles, courses created by non-traditional education providers (e.g., DeepLearning.AI, Google, and IBM) were removed. To provide a variety of design styles from disparate disciplines, courses were classified into the commonly used head disciplines of academic study: applied science, natural science, formal science, social science, and humanities. The grouping draws from established disciplinary taxonomies (Becher & Trowler, 2001; Abbott, 2001) that recognize the delineation and flexibility of academic disciplines. Five courses under each head discipline were chosen for inclusion, meaning a total of 25 courses (10% of the original 250) were selected.

The secondary data for this study consists of learner-generated reviews, primarily student course evaluations, collected from the Class Central and Coursera platforms. These reviews reflect users' perceptions of MOOC video lectures (MVLs) and were selected based on a keyword search for "video" and "lecture," ensuring relevance to the study's focus. The reviews are ordered by the "Most Useful" rating system on these platforms, which ranks feedback based on user votes for helpfulness, though the specific criteria for "usefulness" are determined by the platform algorithms and may vary. This rating system introduces a potential for self-selection bias, as users who choose to rate or comment may have stronger positive or negative

experiences, potentially skewing the sample toward more engaged or dissatisfied learners. Additionally, there is no evidence that users were prompted with specific questions; the reviews appear to be unsolicited, voluntary responses, which may further contribute to variability in content and focus. Despite this, the large sample size (2,239 reviews) and diverse course selection help mitigate some bias by capturing a broad range of perspectives across disciplines.

Text Sampling

This study sought to collect 100 texts written about each course selected for inclusion. Texts were selected first from reviews hosted on Class Central and Coursera. The reviews are ordered by the “Most Useful.” A keyword search is performed using the tokens “video” and “lecture.” Reviews that feature these keywords are scanned to check the references to MVL germane to the course. Germane texts are copied and placed into a corpus. Saturation of collection is considered to have occurred once a total of 100 texts have been collected or no further reviews are found to include the initial keywords. The threshold of 100 reviews per course was chosen to balance depth of analysis with practical feasibility, ensuring sufficient data to capture diverse learner perspectives on MVLs. This decision aligns with qualitative research standards suggesting that thematic saturation often occurs after 60–100 responses (Guest et al., 2006), particularly in studies involving online reviews where user experiences may vary widely. The “Most Useful” ordering was prioritized because it reflects reviews deemed valuable by the learner community, likely providing detailed and relevant insights into MVLs, as opposed to chronological sampling, which might include less relevant feedback, or random sampling, which risks missing critical perspectives. However, this approach may introduce selection bias by favoring more extreme or eloquently written opinions, potentially overrepresenting strong positive or negative experiences. The keywords “video” and “lecture” were selected as the most direct and commonly used terms to identify MVL-related content, a method supported by prior research (Deng & Gao, 2023). However, this approach has a limitation: it may exclude valuable reviews using synonyms like “clip” or “presentation,” potentially narrowing the scope of captured perspectives. This constraint was accepted to maintain focus and feasibility in the data collection process. The final corpus used to generate qualitative data consists of texts from 2,239 individual reviews. Of the 25 courses, 15 included enough reviews that featured the keywords “video” and “lecture” to meet the saturation threshold of 100 texts. Of the remaining 10 courses, a range of 31–99 texts were obtained. The total number of tokens (words) in the corpus is 138,711, with tokens ranging from 1,167 to 8,962. The mean age of reviews in each course ranged from 1.14 to 4.28 years, with an overall mean age of 3.2 years. This study used a purposeful sampling strategy based on the platform’s “Most Useful” algorithm rather than a direct survey distribution to a known denominator of students. Therefore, a traditional response rate is not applicable. The sample represents a corpus of high-visibility feedback rather than a randomized cross-section of all enrollees.

Data Analysis

The texts are given identifiers made up of the letter “R” (for “Reviewer”), the course number (01–25), and the order in which they were selected (0–100). So, the identifier for the first reviewer of the first course selected is “R01/01,” and so on. Raw data were added into NVivo 14 for analysis. At the analysis stage, this study used a combined theoretical framework of

computer-aided qualitative data analysis software (CAQDAS) and flexible coding. Tracy (2020) says CAQDAS “not only eases the sorting and data management process, but also provides options that can lead to advanced interpretation” (p. 237). Tracy goes on to suggest that qualitative data analysis is appropriate when researchers want to capture online data, when there is a large amount of qualitative data to process, and when multiple participants or sites are involved in a study. For Deterding and Waters (2021), the use of qualitative data analysis software marks a paradigm shift away from a historical reliance on grounded theory (Glaser & Strauss, 1967), which they claim is not fit for analyzing large data sets, does not take into account the affordances of technological advances, and makes reanalysis of secondary data sets challenging. Instead, they claim, flexible coding is more appropriate to identify themes, instances, and examples of real-world phenomena in a non-linear and adaptive fashion to develop fresh categories and ideas from texts. This approach aligns with Guba and Lincoln’s (1985) call for systematic yet flexible methods in qualitative inquiry that prioritize trustworthiness through transparent, traceable analytic processes.

The coding process began with a deductive approach, using pre-established categories of cognition, affect, and social, which were directly informed by the CASTLE framework (Schneider et al., 2022) to align with the study’s theoretical lens. To ensure consistency during this deductive phase, strict boundary rules were applied to operationalize the CASTLE constructs. References related to mental effort, information processing, clarity, or understanding were coded as Cognition. Explicit emotional descriptors (e.g., “love,” “bored”) and statements regarding drive or persistence were coded as Affect. Finally, references to the instructor’s personhood, relationship building, or non-verbal signals (e.g., gaze, tone) were coded as Social. This rule-based approach prevented overlap before the inductive theme development began.

This was followed by an inductive phase to allow for the emergence of sub-themes and themes within these categories. In this paper, we use *themes* to refer to higher-order patterns within each CASTLE category, and *sub-themes* to refer to the more specific recurring ideas nested within those themes. In the first phase, coded excerpts within each category were reviewed for semantic similarity and clustered into candidate sub-themes. For example, texts expressing emotional responses (e.g., enjoyment, appreciation, frustration) were compared and grouped under Affect, while those discussing clarity, organization, and understanding were compared and grouped under Cognition. In the second phase, candidate sub-themes were refined through an iterative, constant-comparative process: sub-theme labels were merged when they captured overlapping meanings and split when excerpts reflected distinct ideas. In the third phase, the finalized sub-themes were examined to identify higher-order themes that represented recurring patterns across excerpts (e.g., positive versus negative affect; lecturer role/performance; production/design elements; interconnectedness with course resources) that represented recurring patterns within each CASTLE category (reported in the Findings section).

To enhance transparency, a short codebook is provided in Table 1, outlining the main categories, associated themes and sub-themes, definitions, and illustrative example quotes from the data. Intercoder reliability was assessed using Cohen’s Kappa, yielding an agreement score of .84, reflecting strong agreement.

Table 1*Short Codebook*

Category	Definition (CASTLE-informed)	Theme	Sub-themes	Example quote
Affect	Emotional responses to MVLs, including motivation, enjoyment, or frustration.	Positive affect	Enjoy/Fun/Love; Gratitude; Motivation	“I especially loved the animated videos” (R0566).
		Negative affect	Boredom; Unhappiness	“The professor was mind numbingly painful to listen to” (R2189).
Cognition	Processes related to understanding, retention, and cognitive engagement with MVLs (e.g., clarity, structure, organization).	Role of the lecturer	Personality; Pedagogic practice; Performance	“What a charismatic and passionate teacher he can transfer, through a single video, the intense interest he nurtures in the subject” (R0348).
		Design elements	Autonomy; Instructional design; Production	“The lectures are clear, concise, and engaging, making the material accessible to learners of all levels” (R0246).
		Inter-connectedness	Resources; Assessment alignment	“Great set of slides, readings and the video lectures. Used many different modalities to illustrate points” (R2268).
Social	Perceptions of social presence/connection through MVLs (e.g., relational cues, interpersonal warmth, co-presence, non-verbal signals).	Teacher–student connection	Co-presence/shared space	“You feel like you were in a real lecture room with the lecturer” (R05100).
		Personality	Warmth/enthusiasm/humor	“Delivers the lectures with such passion and enthusiasm” (R2172).
		Physical cues	Speech/embodied cues	“Speaks to the audience, not the camera” (R1221).
		Absence	Missing social cues	“They don’t allow you to feel any connection with the professor” (R0528).

Trustworthiness

To support the trustworthiness of the qualitative analysis, we drew on Guba and Lincoln's (1985) criteria of credibility, transferability, dependability, and confirmability. Table 2 summarizes the main strategies implemented for each criterion in this study.

Table 2

Four Criteria for Trustworthiness

Criteria	Strategies Implemented
Credibility	CASTLE-aligned boundary rules to guide deductive coding of reviews into cognition, affect, and social categories. Primary coding by the first author, followed by an independent inter-rater check on a sample of reviews using the finalized codebook, consistent with process-based guidance on intercoder reliability (Cofie et al., 2022). Cohen's kappa = .84.
Transferability	Purposeful sampling of 25 MOOCs across five head disciplines to capture diverse MVL designs and learner perspectives. Thick description of the corpus and context (platforms, "Most Useful" ordering, keyword filters, number of reviews and tokens, review age range).
Dependability	Structured multi-phase analytic process (deductive categorization → inductive development of sub-themes and themes). Consistent use of stable identifiers (R + course number + selection order) and NVivo 14 project organization to track coded excerpts.
Confirmability	Reporting themes with illustrative quotations and identifiers to allow readers to trace interpretations back to specific reviews. Use of an explicit CASTLE-informed coding frame and codebook to constrain categorization and reduce individual interpretive bias.

These strategies were used to enhance the rigor and transparency of the qualitative analysis and to align the study with established criteria for trustworthiness in naturalistic inquiry. We next present the findings addressing RQ1 and RQ2.

Findings

RQ1. Learner perceptions of affective, cognitive, and social cues in MVLs

To address RQ1, we report learners' perceptions of affective, cognitive, and social cues in MOOC video lectures (MVLs) as expressed in learner reviews. We present the findings by CASTLE-aligned categories (affect, cognition, social), summarizing the principal themes and illustrative examples that recurred across the corpus.

Affective Cues

Positive affect related to MVLs was coded in 502 reviews across 25 courses, with three themes emerging: love, gratitude, and motivation. Negative affect was noted in 76 reviews across 19 courses, with two themes: boredom and unhappiness.

Positive Affect

The theme of *love* was coded in 225 reviews of 25 courses. Learners expressed enjoy/fun/love through comments like R12/31: “The lecturer made the course fun” and R05/66: “I especially loved the animated videos.” The stemmed word *thank* was returned 489 times and was the most frequent word relating to affect found. The theme of *gratitude* was coded in 97 reviews of 20 courses. Gratitude was expressed to lecturers (e.g., R18/67: “I have learned so much. Professor Manson is simply amazing. Thank you”), to the production team (e.g., R21/44: “Thank all the team and lecturers, who put this course together, for their hard work!”), and to institutions (e.g., R03/57: “Special thanks to Yale and Coursera for making this accessible to the masses”). The theme of motivation was identified in 180 reviews from 20 courses. Learners expressed it in statements like R12/84: “I ended up listening to the lectures while eating all three meals,” and R24/20: “inspired me to apply to university.”

Negative Affect

Boredom surfaced in 57 reviews across 17 courses. Learners noted it with comments like R21/89: “the professor was mind numbingly painful to listen to,” and R25/11: “Background is boring.” *Unhappiness* was coded in 19 reviews from 9 courses. It appeared in remarks like R07/04: “The lectures were so steeped in SJW tropes,” and R20/16: “diminished by the professor.”

Cognitive Cues

The stemmed word *learning* was returned 937 times while *understand* returned 597 times, or the fourth and sixth most frequent in the corpus, respectively. The largest number of coded texts related to cognition with 2,186 references across all 25 courses, with 1,442 reflecting positive perceptions and 744 negatives. These references were themed by role of the lecturer, design elements, and inter-connectedness.

Role of the Lecturer

There were 485 positive and 101 negative mentions of the *role of the lecturer* in relation to cognition. One sub-theme was the facilitating role of the lecturer’s *personality*, referenced positively 196 times across 22 of the courses and attributed to the lecturer’s role as providing charismatic leadership, being a cheerleader for a subject, embodying a subject matter expert, and providing humor. R03/48 wrote of the lecturer “What a charismatic and passionate teacher; he can transfer, through a single video, the intense interest he nurtures in” the subject. R02/13 wrote that the lecturer’s “enthusiasm for the subject is evident throughout the course, making it enjoyable to learn.” R21/10 said the lecturer “lends his own intellectual brand of associations to certain of the more complex ideas, thus rendering them accessible to learners who are new.” R02/69 wrote the lecturer’s “fun way of explaining things both in his videos and the book will help you learn things in a simple way.”

Another subtheme was the lecturers' *pedagogic practice*, stated in 180 reviews covering 24 courses, with giving *clear explanations* (89), *introducing content at the appropriate level of cognitive load* (64), and *using examples* (23) emerging within the subtheme. R02/29 wrote "the instructor uses simple language to explain complex concepts, making it easy for anyone to understand," R08/80 wrote that the lecturer "broke everything down to the barest minimum for us to understand," and R08/28's "The lecturer was providing the right examples, which helped me to understand concepts clearly." Learners also wrote negatively of *pedagogic practice* in 28 references for 11 courses. For R03/16 "no specific and concrete topics were presented [or] explained" while R15/08 noted challenges if learners were not "Up-to-date on all the latest and great math jargon" and R15/13 stated lectures were too "high-level."

Lecturing as *performance* facilitating cognition was coded in 109 references to 22 courses. R15/67 wrote the lecturer "has a good speaking and teaching style which keeps me interested" and for R05/29 the tone in the lecturer's performance was noteworthy because "He is very soft spoken and maintains composure" which helps learners "fully understand their experiences." The negative reviews of *performance* were coded in 74 references to 21 courses. R03/10 wrote that their lecturer "was not very engaging and did not really provide emphasis on key concepts to make it stick" and R14/58 the lecturer "was constantly looking sideways to read the text. It was very distracting for me." R05/75 noticed "occasional "hum and haw" episodes which sound very irritating in an online course."

Design Elements

There were 733 references to 25 courses coded as relating positively to *design elements* and *cognition*. These were made up of three sub-categories: *autonomy* (87), *instructional design (positive)* (288), and *production (positive)* (358). There were 508 negative references made up of *production (negative)* (248), and *instructional design (negative)* (260).

The stemmed keyword *online* appears in 144 references to all 25 courses, while the stemmed keyword *download* appears 16 times. Reviewers that discussed *autonomy* spoke of self-determination and control over their learning. R07/21 wrote "Loved the freedom to explore the lectures at times where it fit in my schedule [...] Learned a lot of information" and R21/46 said, "the ability to learn online at my own pace over the week fitted in well with working at home." R03/65 wrote: "I definitely found it okay to increase the video speed to 1.5X, as the dialogue is very clear and paced to be easily understood by all," and R18/35 stated "I will be definitely coming back, watching the videos for a better understanding of the material."

Reviewers discussed the instructional design practices that promoted learning. Reviewers talked about the value of MVLs that are clear, concise, easy or simple, engaging, and included examples to explain ideas. R02/46 writes "The lectures are clear, concise, and engaging, making the material accessible to learners of all levels," while R04/38 states, "Videos were clear, straightforward and easy to follow and understand" and R14/26 adds "All the videos were clear and easy to follow and understand." Negative reviews included things like R07/29's "Could not follow lessons. Information in the videos is very scattered" and R11/11's "most of the videos were too complex to understand without prior knowledge on the matter."

Reviews coded as relating to *production* can be broken into three sub-themes: *length* (positive 121 / negative 91), *media* (positive 104 / negative 56), and *quality* (positive 133 / negative 99). There was support for shorter lectures, for example R02/94 wrote “The video has divided into the small part, normally 10-15 mins, makes it easy to learn” and criticism of longer artifacts, for example R13/08 wrote that from a “pedagogical angle [...] you can’t do 27-minutes video when we know that the average focus of a student is lower than that.” Some learners suggested ideal times: “max 5 minutes” (R06/58), “max 7 minutes” (R22/10), and “no longer than 10 minutes” (R25/67). Learners called out positive uses of multimedia production: R04/60 felt lectures were “easy to understand” when they “have a picture and some detail of the lesson in the video to explain more things” and R05/39 appreciated “images and bullet points as support.” Reviewers also called out perceived negatives in multimedia production choices: R03/14 noted that text media was “too wordy and/or provide a reference guide on what was covered in the entire lecture” and R05/04 stated “obnoxious sound effects to drown out the speaker.”

When positive, commentary on *quality* tended to be broad: R02/29 offered “Videos are very good quality,” and R15/16 “The video production is really good.” However, negative comments tended to include specifics. R07/02 noted “Titles projected within the video are often misaligned; some have animations, others do not, and this inconsistency undercuts the value of the content” and R14/11 observed “The video content production came across as very amateur, lines of flubbed dialogue left in, and overall just came across as unprofessional.” R07/11 noted “The videos failed to utilize the potential of motion pictures and instead relied on teleprompter reading.”

Inter-connectedness

The stemmed word *course* was the most frequently returned, with 3,013 tokens available. This compares with *lecture* at 1,824 and *video* at 1,333. The stemmed word *assignment* appeared in 201 references, *test* appeared in 128 references, *quiz* appeared in 119 references, and *assessment* in 36. Interconnection with course materials, resources, and assessments that affected learning was mentioned as a positive in 224 reviews covering 25 courses and as a negative 136 times covering 23 courses. Reviewers wrote about connections to resources as a positive, for example R22/68 wrote “Great set of slides, readings and the video lectures. Used many different modalities to illustrate points,” or as a negative, for example R09/93 felt “There are almost no actual readings, and the videos are helpful but don’t tell you everything you need to know.”

The inter-connectedness between assessment and MVLs was unusual in that the frequency of negative references (95) was higher than positive (86) references. Learners noted inconsistencies, for example R16/02: “I felt I was really developing a deeper understanding. BUT then the exams at the end of each lecture consistently required” knowledge outside that presented in MVLs. R18/05 wrote “Often, it felt like the questions were on information that the teacher said almost in passing.” Conversely, learners also had a favorable view of knowledge measures and appreciated them when perceived as useful: “Very nice lectures and practice quizzes” (R23/17) and an “approach of learning were you watch lectures, and then review material with quiz” (R02/66) was appreciated.

Social Cues

Social elements in MVLs yielded 608 references across 25 courses, grouped into *teacher–student connection*, *personality*, *physical cues*, and *absence*.

Teacher–Student Connection

There were 300 texts, referring to 25 courses, coded to reflect the phenomenon of the learners perceiving a social relationship. 198 used formal titles (*lecturer*, *instructor*, *teacher*, *professor*), signaling a traditional, hierarchical view of the relationship. Meanwhile, 49 learners used lecturers' first names, recognizing instructors as approachable social actors. Learners described a “good and interesting lecturer” (R03/03), “a very good teacher” (R04/31), and “Peter” giving “enthraling lectures” (R21/71). Additionally, 53 references highlighted a sense of shared instructional space, as in: “you feel like you were in a real lecture room [with the lecturer]” (R05/100) and lectures were “the same [...] as we would have received sitting in a classroom in New Haven [the home of Yale University]” (R24/42).

Personality

Learners (214) noticed when they were able to discern *personality* traits in lecturers. R21/72 noticed the lecturer “delivers the lectures with such passion and enthusiasm.” Learners also recognized social cues in the humorous behaviors of lecturers. For instance, R21/30's review included “The lecturer was excellent and showed a great love for the subject with the occasional unexpected injections of humour.” Other aspects of a lecturer's “personality came through” (R18/76) in MVLs like them being “kind” (R08/57), “patient” (R04/28), or “warm” (R02/35).

Physical Cues

Direct references to *physical cues* were coded in 59 reviews of 18 courses. Of these, social cues in *speech* were noted in 43 reviews when the lecturer “talks to you” (R02/72) and “speaks to the audience, not the camera” (R12/21). A small number, 16, reported *embodied social cues*, including a positive report of the lecture's “accompanying smile” (R01/34) and a negative review of a lecturer who “always folds their hands in front of their waist” (R03/38).

Absence

There were 35 reviewers of 9 courses that noticed negative perceptions when *social cues* were *absent* because they “don't allow you to feel any connection with the professor” (R05/28) or the lecturer “was just reading the content out of a script rather than trying to convey or interact with the students in any sense” (R14/47).

RQ2. MVL characteristics most significantly impacting learner affect, perceived cognition, and feelings of social connection

RQ2 asks which MVL characteristics most significantly impact learner perceptions across the three CASTLE dimensions. Based on the learner perceptions reported in RQ1, we synthesize the findings here to highlight the specific characteristics that shaped affect, cognition, and social connection.

Role of the Lecturer

The characteristics of the lecturer, specifically their personality and delivery style, emerged as the most significant influence on learner perceptions across all three dimensions. The high frequency of love and motivation codes (affect) highlights how massive virtual learning environments often create enjoyable experiences, deepening emotional investment. This emotional engagement was tied to engaging content or a lecturer's charisma, making learning memorable. In a broader analysis, these positive affective responses fueled enthusiasm, promoted active participation (cognition), and often stemmed from the lecturer's inspiring presence (social).

Conversely, characteristics such as reading from a script or lack of eye contact were central to reports of boredom and unhappiness. The presence of boredom suggests some MVLs fail to stimulate, risking disengagement. Boredom points to a lack of dynamic content or delivery, weakening emotional and cognitive investment. Viewed conceptually, it diminishes interest (affect), reduces retention (cognition), and can make the delivery feel detached (social). This theme suggests that learners are highly sensitive to the lecturer's personal characteristics, which play a significant role in shaping their perception of the MVLs.

Design and Production

Production characteristics significantly impacted how learners processed content (cognition) and felt about the course (affect). Positive perceptions were driven by characteristics that supported autonomy and reduced cognitive load, such as short video length, clear segmentation, and the use of supporting visuals. The prevalence of motivation indicates MVLs often drive persistence and real-world action, showing strong learner engagement.

Negative production characteristics, such as poor audio or "flubbed" lines, were not just cognitive distractions but also affective irritants. Unhappiness, though less frequent, carried weight, signaling dissatisfaction. It stemmed from unmet expectations, such as perceived bias or disrespect. In an evaluative sense, it generates negative emotions (affect), distances learners (social), and may render content irrelevant (cognition). This theme indicates that physical and production cues are a noticeable and impactful aspect of MVLs.

Interconnectedness and Social Presence

The final set of characteristics concerned the degree of connection, both interpersonal and structural. Interpersonal connection was driven by social cues that fostered a sense of co-presence. These patterns suggest that social presence is important for engagement: some learners value authority and structure, while others respond to warmth and relatability. The sense of co-

presence and authenticity, evoked by both formal and informal cues, supports motivation and belonging.

Structurally, the connectedness of MVLs to other course elements (assessments and resources) was important. Gratitude suggests learners deeply appreciate the effort invested in creating meaningful MVLs, reflecting an emotional connection to the learning experience. Gratitude here indicates a recognition of value, accessible content, inspiring teaching, or high-quality production, which fosters a positive emotional response. Within the CASTLE framework, gratitude ties to affect by boosting motivation, to social presence as learners thank lecturers for fostering connection, and to cognition as appreciation often links to clear, useful content. Conversely, the absence of cues or misalignment with assessment suggests that learners actively notice and are negatively affected by a lack of engagement or interactivity, which directly weakens social presence and can lead to alienation.

Discussion

This study illuminates how learners perceive affect, cognition, and social cues in MOOC video lectures (MVLs), particularly emphasizing the lecturer's role and learners' streaming-like consumption behaviors. These findings are contextualized within existing literature on MOOCs, highlighting both alignment and divergence with prior work.

The Lecturer as a Central Figure

Consistent with existing research, this study underscores the lecturer's pivotal role in shaping learners' perceptions of MVLs. Positive learner reviews often praised lecturers for their passion, enthusiasm, and charisma, echoing findings from Wei et al. (2022), who noted that intrinsic motivation and instructor presence significantly influence learners' perceived outcomes. Similarly, Deng and Gao (2023) emphasized that lecturers who demonstrate organization, clarity, and accessibility contribute to favorable learner perceptions.

However, this study adds nuance by highlighting the dual role of lecturers as both educators and performers. While prior research has largely focused on cognitive aspects like instructional clarity (Wei et al., 2022) or technological features like media-rich design (Deng & Gao, 2023), our findings suggest that affective elements, such as humor, warmth, and enthusiasm, are equally critical. For instance, learners described lecturers as "cheerleaders" or "charismatic leaders," attributes that transformed the educational experience into something akin to entertainment. This aligns with Atapattu and Falkner (2018), who found that narrative and conversational discourse enhances learner engagement, but our study extends this by illustrating how these qualities evoke emotional investment, often expressed as gratitude or loyalty.

Conversely, when lecturers failed to engage dynamically, through monotone delivery or excessive dependence on scripts, learners reported negative emotions such as boredom or frustration. This observation supports Fuller et al. (2020), who highlighted that less interactive and overly formal approaches can erode the relational aspect of learning, limiting engagement.

Streaming-Like Consumption

One of the unique insights from this study is the framing of MVLs as part of a “want-to-learn” streaming culture, where learners approach educational content with expectations akin to entertainment. This behavior mirrors findings by Deng and Gao (2023), who observed that learners prioritize shorter, well-produced videos to reduce fatigue and maintain interest, much like selecting episodes in a binge-worthy series.

However, our findings suggest that learners’ motivation extends beyond mere consumption; many expressed using MVLs to inspire life-changing decisions, such as applying to university. This deeper engagement contrasts with Perez-Navarro and Conesa’s (2021) work, which focused on satisfaction with technical features and video formats but did not explore the transformative potential of MVLs. By framing MVLs as a blend of entertainment and education, this study bridges the gap between the instrumental and aspirational aspects of MOOC learning experiences. This consumption pattern closely mirrors the “Netflix effect” or binge-watching behaviors identified in media studies (Matrix, 2014), where viewing is driven by a desire for narrative continuity and emotional connection as much as content acquisition. Just as binge-watchers sustain attention through “parasocial” bonds with fictional characters, MOOC learners appear to sustain cognitive effort through similar bonds with the “performer” lecturer.

Cognition and Instructional Effectiveness

Cognitively, our findings align with Wei et al. (2022) and Deng and Gao (2023), who highlighted the importance of clarity, conciseness, and scaffolding in instructional design. Learners in our study frequently praised clear explanations, incremental difficulty, and practical examples. These elements were particularly valued when integrated with high production quality, a finding consistent with Deng et al. (2017), who emphasized that well-edited, visually engaging videos enhance understanding.

However, this study also reveals tension points absent from much of the prior literature. While instructional clarity was lauded, scattered or overly complex content drew sharp criticism, suggesting a need for greater alignment between video lectures and supporting materials. Learners in our study echoed concerns from Fuller et al. (2020) regarding the disconnection between MVLs and assessments, which sometimes led to frustration and diminished learning outcomes.

Social Cues and Connection

The study reaffirms the importance of social presence in MOOC learning, particularly through lecturers’ use of non-verbal cues, conversational tone, and humor. Deng and Gao (2023) similarly highlighted the role of embodied social cues in creating a sense of connection, but our findings extend this by showing how learners actively interpret these cues as indicators of the lecturer’s authenticity and commitment. Positive perceptions of warmth, humor, and approachability were frequently tied to learners feeling part of a shared learning experience, reflecting the principles of connectivist pedagogy (Fuller et al., 2020).

Yet, the absence of social cues, such as lecturers reading from scripts or lacking eye contact, was perceived as alienating, reinforcing findings from prior MOOC research that teacher presence and engaging instructional practices are central to learner engagement, cautioning against impersonal, overly scripted delivery (Deng et al., 2017). This reinforces the need for MOOCs to balance the efficiency of scripted content with the relational dynamics that foster a sense of belonging.

Learning from the Negative: Anti-Patterns for Design

While positive reviews highlight effective practices, the negative reviews offer a critical “anti-pattern” for instructional design. The recurrence of the codes *boredom* and *unhappiness* suggests that static visual delivery (e.g., “teleprompter reading”) and poor audio quality are not merely neutral absences of good design, but active detractors that sever the social connection. Designers should prioritize dynamic framing and authentic delivery over high-budget polish, as learners appear to penalize “amateur” technical flaws and “robotic” performance more heavily than simple visual presentation. Practically, this implies that investment in lecturer training (specifically in on-camera delivery) may yield higher engagement returns than investment in post-production graphics.

Practical Implications

These findings suggest that MOOC practitioners should reimagine lecturers as both educators and performers. Training programs for lecturers could incorporate principles of narrative storytelling and audience engagement, drawing from both educational and media production fields. Additionally, MOOC design should cater to learners’ streaming-like preferences by emphasizing shorter, visually appealing videos that integrate social and cognitive cues effectively. Finally, enhancing the interconnection between MVLs, assessments, and supplementary resources is essential to ensure coherence and continuity in learning.

Theoretical Contributions

This study contributes to the literature by contextualizing the CASTLE (Cognition, Affect, Social-Teacher, Learner-Environment) framework within the evolving landscape of MOOC consumption. It highlights how lecturers’ affective and social roles intersect with learners’ motivations to create an educational experience that feels both personalized and aspirational. Furthermore, by framing MVLs as a hybrid of education and entertainment, this study opens new avenues for exploring how media consumption behaviors influence digital learning.

Limitations and Future Directions

This study relies on unsolicited learner reviews, which introduces several forms of sampling bias. Reviews were drawn from Class Central and Coursera and ordered by platform “Most Useful” rankings, which may privilege unusually detailed or extreme perspectives and may disproportionately surface praise for charismatic, high-performance lecturers. In addition, the reviews appear voluntary and not prompted by a standardized set of questions, which may

increase variability in what learners choose to comment on. Finally, the corpus was assembled using keyword searches for “video” and “lecture,” which may exclude relevant reviews that refer to MVLs using different terms (e.g., “clips” or “presentations”), narrowing the range of captured perspectives. Because the dataset reflects a high-visibility corpus of feedback rather than a randomized cross-section of all enrollees, a conventional response rate is not applicable.

Conclusion

This study reveals the critical role of lecturers in shaping learners’ perceptions of MVLs and the emerging trend of streaming-like consumption patterns in MOOCs. By framing MVLs as both educational and entertaining, the findings suggest that lecturers must balance instructional clarity with affective and social presence to foster meaningful engagement. Practical recommendations include training lecturers as educator-performers, designing shorter, visually engaging videos, and enhancing the integration of MVLs with broader course materials.

The study extends the CASTLE framework by illustrating the intersection of cognitive, affective, and social dimensions in digital learning environments. It highlights the need for future research to incorporate diverse methodologies, including analytics-based measures, to validate and extend these findings across cultural and demographic contexts. As MOOCs continue to evolve, understanding how learners interact with MVLs will be critical to creating effective, learner-centered digital education experiences.

Declarations

Ethics Statement

This study was approved by the author’s affiliated institution under IRB 24427.

Conflicts of Interest

The author(s) declare no conflicts of interest.

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AI Use Statement

Generative artificial intelligence (AI) was used in the preparation of this manuscript for style refinement, proofreading and grammar checks, and reference list formatting. The AI tool was not used to generate, analyze, or interpret research data, nor to create original scholarly content. All content was reviewed, verified, and approved by the author, who takes full responsibility for the accuracy and integrity of the work.

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